

THE LARYNGOSCOPE.

VOL. XXVIII. ST. LOUIS, FEBRUARY, 1918. No. 2.

ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding)
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RESULTS OBTAINED BY TONSILLECTOMY IN THE TREATMENT OF SYSTEMIC DISEASES.*

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The most important work in medicine in the last decade is the elucidation of the relationship of focal infection, especially that of diseased tonsils, to systemic disease. That the tonsils play an important part in various infections was demonstrated years ago by laryngologists. In this connection I refer you to such men as Wood, Goodale, Wright, and others, whose research as far back as the nineties shows that the laryngologist must be recognized as the pioneer in this work. However, this early enlightenment of the individual worker in tonsillar infections did not, at first, engage the attention of general medical practitioners. But when, within the past few years, the real significance of tonsillar infection was demonstrated, through the bacteriological studies and experiments of laboratory workers, co-operating with clinicians, the medical world recognized a new and a very important factor in medicine. Rosenow's newer bacteriology, and the excellent work of men like Billings, Davis and Jackson, with their co-operators, who worked to better advantage than could separate individuals, awakened the general practitioner to the importance of this great subject. Davis made a careful bacteriologic study of the bacteria removed from the tonsils in various diseases. He reproduced many of these conditions in animals by the injection of the bacteria. His studies in-

*Read at the Twenty-third Annual Meeting of the American Laryngological, Rhinological and Otological Society, June 1, 1917, Atlantic City, N. J.

cluded patients with endocarditis, nephritis, arthritis, etc. Rosenow proved that many ulcers of the stomach are associated with tonsillar infections. He obtained streptococci from some of these ulcers, and after injecting cultures of these organisms into animals, was able to observe gastric ulcers in them.

To-day we are in the midst of a period in which tonsillectomy as a therapeutic measure in the treatment of systemic diseases is very popular. The laryngologist does not need compiled data to be told that the removal of diseased tonsils for systemic diseases is followed by improvement in the general health of the patient. Those who feel satisfied that the beneficial results are evident without enumeration of statistics are not heeding the claims, and even protests, that have appeared from time to time in both medical and lay papers; claims that the tonsil is held responsible for too many diseases, and that the beneficial effects do not justify the numerous enucleations. These articles have not dealt kindly with the surgical procedure of tonsillectomy. Even a few responsible and distinguished medical men pronounce such criticism as most timely.

It is incumbent upon us, therefore, to inform ourselves regarding this important subject; to ascertain whether or not the pendulum has swung too far, lest the medical profession at some later period declare that we have sacrificed tonsils unnecessarily in the treatment of systemic diseases.

Sufficient time has elapsed since tonsillectomy has been so freely advocated to enable us to study the general results. Is tonsillectomy doing for these clinical conditions all that the laryngologists and the internists expected? Has the measure a substantial scientific backing?

A few months ago, in order to obtain as accurate data as possible, I submitted an inquiry to many laryngologists and a few internists throughout the country, requesting information concerning this matter. The statistics herein compiled do not make any pretension to exactness, but the information therein contained ought to serve the purpose of showing us where we are. As someone has said: "The best way to get ahead is sometimes to stop short and see where we are."

The questionnaire submitted to laryngologists and internists requested information regarding the results obtained by tonsillar enucleation in cases of arthritic, cardiac, renal, and other systemic diseases. Only complete reports have been compiled; the cases reported in numbers were kept separate from those reported in percentages. Out of many responses to the query, ten reports giving

the number of cases furnished available material for statistics. The ten reports include 894 cases. The list of questions in the query and the compiled data are as follows:

1. In systemic diseases where the tonsils were considered the only source of infection, in what number or in what percentage of cases did tonsillectomy produce:

	1. Reported in number of cases:	2. Reported in percentage of cases— average:
(a) <i>Real cures of the systemic diseases?</i>		
Arthritic	262	68%
Cardiovascular	3	36%
Renal.....	21	81%
Other conditions		
Rheumatic group (neuralgia, lumbago, perineuritis, myositis, etc.).....	220	
Chorea	3	
Cervical adenitis (simple).....	57	
Chronic toxemia		
(b) <i>Considerable improvement of the systemic disease?</i>		
Arthritic.....	184	20%
Cardiovascular	25	18%
Renal.....	12	5%
Other conditions		
Rheumatic group		
Chorea	17	
Cervical adenitis (simple or tuberculosis) 51	51	
Hyperthyroidism (goitre)	13	
(c) <i>No improvement of the systemic disease?</i>		
Arthritic.....	14	12%
Cardiovascular	3	46%
Renal.....	4	14%
Other conditions		
Rheumatic group	3	
Goitre.....	1	
Cervical adenitis (tuberculous?).....	12	
2. Following tonsillectomy, what percentage of cases developed:		
(a) Acute exacerbation of the systemic dis- ease, arthritic	10	10%
Goitre	1	10%
(b) A post-operative low grade infection.....	9	3%
(c) Co-existent infection as causative factors of the systemic diseases.....		28%
(d) Nasal sinuses	49	

The answers to the questionnaire, confirmed by the above figures, show that tonsillectomy in the treatment of systemic diseases, when based on rational and well founded relation of cause and effect, and when performed under the most favorable conditions, has given exceedingly satisfactory results.

The percentage as presented, especially in the arthritic class, compares favorably with statistics of other observers.

The following table shows the number of cases in some of the conditions as reported above in column 1, and the cases recently reported in the Johns Hopkins Hospital Bulletin, both reduced to percentages, along with the percentages as already reported in column 2:

	1. Above column reduced to percentages:	2. Same as column 2:	3. Johns Hopkins Hospital Bul. percentages:
(a) <i>Real cures of the Sys- temic Diseases?</i>			
Arthritic	58%	68%	Infectious Arthritis 77½%
			Acute Rheumatic Fever 80 %
Renal	56%	81%	72½%
Cervical Adenitis	49%	33½%
(b) <i>Considerable Improve- ment of Systemic Diseases?</i>			
Arthritic	40%	20%	Infectious Arthritis 13 ½
			Acute Rheumatic Fever 12 %
Cardio Vascular	82%	18%	
Renal	32½%	5%	
Cervical Adenitis	41½%		51 %
(c) <i>No Improvement of the Systemic Disease?</i>			
Arthritic	2%	12%	Infectious Arthritis 9½%
			Acute Rheumatic Fever 8 %
Cardio Vascular	9%	46%	
Renal	11%	14%	27½%
Cervical Adenitis	9%		15 %

Every laryngologist and those interested in the subject should be conversant with the excellent report on "The Relation of Tonsillar and Naso-pharyngeal Infection to General Disorders," that appeared in the January, 1917, *Bulletin of John Hopkins Hospital*. The report states that "only in very exceptional circumstances should anyone subject a patient with rheumatoid arthritis to an operation for the removal of the tonsils." A composite statement deduced from the general reports and comments which I received would read that tonsil enucleation alone does not have a beneficial effect on well established conditions, viz., definite arthritic changes and deposits, as ankylosis and fixation, chronic renal disease or chronic heart and blood vessel disease, etc.

The very favorable results in the arthritic class, as reported in numbers, show that the operators were either most careful in the selection of cases, or else that the general health of the patients was afterwards so much better that the operators took it for granted that the arthritic conditions were also improved. The 12 per cent

reported in the "no improvement" arthritic cases is, in my opinion, a fairer statement of the results in the arthritic group. If 12 per cent show "no improvement," what explanation can be given for the lack of improvement in this number of arthritic cases?

One observer said that real cures in these cases followed only after a post-operative use of the autogenous vaccine and local treatment. Dr. Jas. J. King, of New York City, takes a step further in the use of vaccines. He advocates taking cultures from the crypts of the tonsils before removal and making a vaccine to be given until the bacterial activity is stopped or reduced. The tonsils are then enucleated, and if necessary the vaccine is continued after operation. He recommends this method of procedure as most satisfactory, and reports a series of cases. It may be that such a course of treatment in many arthritic cases will reduce the number that show no improvement and lessen the chances of the development of an acute exacerbation of the arthritic disease after tonsillectomy.

Some individual comments taken from the responses of physicians, who answered in a general way, are mentioned here, as they add information of interest. One observer reports a large series of thyroid enlargements with pronounced tachycardia as markedly benefited by tonsillectomy. Letters from prominent surgeons, who do a great deal of thyroid surgery, show that there is a decided uniformity of opinion regarding the relationship between tonsillar infection and the enlargement of the thyroid and hyperthyroidism. All of them advise tonsillectomy in goitre cases that give a history of tonsillar infection, but they do not depend on the procedure as a curative measure. They differ in their views as to the time of performing tonsillectomy; some advocating it before, and others after the thyroid operation. Dr. Crile, of Cleveland, and Dr. Halsted, of Baltimore, prefer to operate on the thyroid first, especially where the symptoms of hyperthyroidism are well marked, because tonsillectomy is a trying operation for these patients. Dr. Bloodgood, of Baltimore, writes: "The tonsil infection or co-existent infection should be taken care of before attacking the thyroid, and there should be an interval of at least two or three weeks before the tonsillectomy and the operation upon the thyroid." He also states that, in 50 per cent of the cases of toxic goitre, he has found either infected tonsils or an infected nasal cavity. At the Mayo Clinic they do the thyroidectomy to relieve the symptoms, and the tonsillectomy to prevent, if possible, recurrence of hyperthyroidism in the remaining lobe.

Regarding co-existent infections, one laryngologist states: "According to my experience, some co-existent focal infection, such as nasal sinus disease or some diseased condition of the gall bladder, bronchial glands, appendix, gastro-intestinal tract, lymph nodes, teeth, etc., was present in practically all cases that showed no improvement after enucleation of demonstrable diseased tonsils." Another observer stated that diseased teeth were found in a large percentage of ward cases. He wrote: "It is our practice now to have a dental surgeon scrubbed up at the operation (the resident dentist at the hospital) who has previously examined all cases and decided which teeth should be removed."

As a result of the experiences of many surgeons now collated, we have reached certain tentative conclusions which may be helpful towards securing better results when tonsillectomy for systemic diseases is contemplated.

Tonsillectomy should not be performed closely following convalescence from an acute purulent infection, such as middle ear, nasal sinus or upper respiratory tract, or acute exacerbation of some systemic disease. Reports show that such cases have developed septicemia. In these cases it is better not only to wait for a considerable time to elapse before proceeding with tonsillectomy, but to take a preliminary culture and cleanse the tonsil crypts by suction and antiseptic applications. In some, the use of vaccines may be a valuable adjunct. If these acute infections have been treated in a hospital, the patient should be discharged temporarily before undergoing the operation. Some patients need prolonged treatment with a view of establishing sufficient resistance to enable them to bear such a surgical procedure as tonsillectomy.

Hospital internes and nurses, especially in recent active service with septic cases, should be given a temporary leave of absence before undergoing tonsil enucleation. Cases of arthritic, cardiac, renal and other systemic conditions must not be allowed to leave the bed too soon after tonsillectomy. This precaution is not observed closely enough by many operators.

The possibility of acidosis occurring in many conditions, especially in the case of children, or of those suffering from any form of exhaustion, must be reckoned with by laryngologists. When this is suspected, a proper and continued examination of the urine for its by-products (diacetic acid or acetone) should be made before operating and, if found, the proper treatment for acidosis given. Some operators advocate a pre-operative treatment of acidosis in all cases. The post-operative symptoms of uremia, even

when albumin is found, may mislead one in recognizing the true condition, i. e., acidosis.

Albuminuria following the removal of the tonsils has been attributed to ether narcosis, the ether supposedly acting as an irritant to the kidneys. This theory cannot be held tenable in view of the bacteriological and chemical findings in the examination of the urine in many cases of tonsillectomy. A recent report by Dr. Ruddel, anaesthetist at St. Vincent's Hospital, Indianapolis, co-operating with Dr. Scott Edwards, shows that practically as many cases of albuminuria followed tonsillectomy where a local anaesthetic was used. They attributed the condition to the fact that a certain amount, perhaps a considerable amount of infective material, is squeezed out of the tonsils during the course of the operation and is injected into the circulation. That ether seemed to be a negligible contributory cause of albumin was shown in the study of several hundred other surgical conditions. They also observed that, where albumin was found prior to the operation, it cleared up in a great number of cases after a few days' rest in bed before tonsil enucleation, and that the kidney disturbance after the operation was less severe. This I also observed in a few of my cases. Rest in bed for from one week to ten days, and a restricted diet should be the proper procedure in all cases of albuminuria found prior to the operation.

Conservatism in tonsil enucleation in early childhood has been the practice of most laryngologists. The position of many laryngologists, in this respect, has been adopted and maintained, no doubt, because of the general belief that the tonsil should be respected as a functioning organ, especially in early childhood development. The reports of competent pediatricians, and of medical men connected with contagious disease hospitals, after years of clinical experience, show that the tonsil is a greater menace to health, in early childhood, than is generally recognized. In answer to a letter of inquiry regarding this phase of the tonsil problem, I received a number of replies from competent pediatricians. The following letter from Dr. La Fetra, of New York City, is typical of the attitude of all concerning the tonsil question:

"In answer to the inquiry in your letter of March 27, I write to say, that I have never been able to notice any abnormality in growth or development in those boys and girls whose tonsils were removed in early childhood. Whatever advantage the tonsils may have physiologically, it would seem that nature has provided sufficient other tissue of the same sort to take up vicariously the work

of the tonsils when these are removed. As regards their susceptibility to disease, I would say that children, whose tonsils have been removed, are much less susceptible to respiratory and gastrointestinal disturbances of all sorts. Moreover, when they have measles, scarlet fever or whooping cough, the disease is much less severe than it would have been had their diseased tonsils been present."

Dr. Henry Hall Forbes' paper, "The Removal of the Tonsils as a Prophylactic Measure," presented last year before the Medical Society of the State of New York, was timely. It showed the attitude of the pediatrician, health officer and other medical men regarding the tonsil question, concerning which there has been a divergence of opinion among members of the medical profession. The present investigation confirms the information Dr. Forbes has given us in that excellent paper. Dr. Forbes shows, from the reports of health officers, that from eighty to one hundred per cent of the contagious disease cases have tonsils; also that tonsils were nearly always present in the cases which developed complications. Dr. Henry L. Lynah, New York, writes: "In our Contagious Disease Hospitals the percentage of admissions in whom tonsillectomy has been performed is from two to four per cent. The other ninety-six to ninety-eight per cent have tonsils in various degrees of size."

Regarding the association of the tonsils and dentition, one occasionally reads in medical literature that one of the functions of the tonsils is an association with dentition, as the tonsils become swollen and inflamed with the eruption of the teeth, and when the tonsils are removed in infancy and childhood, there follows a deleterious effect on dentition. This question was submitted to twelve of the best orthodontists and oral surgeons in America, and they denied, without exception, that early removal of the tonsils had any effect whatever on the development of dentition. The answer to this question, from Dr. Frederick B. Noyes, of Chicago, is as follows: "I have never seen any indication that the early removal of tonsils had any effect whatever on the development of dentition, and I know of no evidence that tonsils, under normal conditions, are in any way connected with the development."

In view of these reports and the attitude of the most prominent pediatricians and health officers in the country, should we not seriously consider the removal of the tonsils as a wise prophylactic measure in early childhood in many more cases than formerly?

Surely this will be an advance in preventive medicine and will thereby lessen the number of tonsillectomies that have to be performed in adolescence and adult life in the treatment of well established systemic diseases.

The author wishes to express his appreciation for the valuable responses from many members of this society and others which made this paper possible.

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AN IMPLANTATION CYST OF THE LARYNX.

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An implantation cyst is one which arises from the accidental intrusion into the subcutaneous or submucous tissues of epithelial cells which retain their vitality and are enabled to develop a cyst very similar in nature to a dermoid; in fact, it may be looked upon as an acquired or traumatic dermoid.¹ The transplanted tissue acts in many instances as a graft, and forms a small cyst.²

Implantation cysts of the skin vary much in size; some are scarcely as large as a split pea; and others may be as large as a cherry. In many, the microscopic characters appear as if a piece of the skin covering had been inverted. In others, the implanted epidermis seems to have been shed in layers, so that on section the interior of the cyst is occupied by epithelial laminae.² The skin or mucous membrane above the cyst is not adherent to it, and often a scar is visible. The cyst wall is composed, from without inward, of connective tissue and epithelial cells, the stratum corneum being the inner layer.³ These cysts contain desquamated epithelium and often cholesterin; when they occur on the scalp they contain hair.

Implantation cysts are caused in a variety of ways, such as punctures by awls, forks, needles, thorns, glass, etc., also wounds by knives, incisions by scalpels, bites and lacerations.⁶

Cysts of the iris are of comparative rarity, generally appearing as transparent vesicles situated on its anterior surface. As a rule they are sessile, but may possess a pedicle. The contents may be opaque, but in exceptional cases they have been filled with sebaceous material, such as fills the cavities of dermoids. It is now recognized that these cysts are due to fragments of corneal epithelium, epidermis, and eyelashes carried into the anterior chamber by accident. Similar cysts have been produced in the eyes of rabbits by the artificial introduction of eyelashes and epithelium into the anterior chamber.⁴

In the process of healing in wounds of the cornea, the epithelium on the surface usually grows rapidly down into the deeper parts. Sometimes it happens that the epithelium extends beyond the inner orifice of the wound and into the interior of the eye. In that case it grows on along the walls of the anterior chamber and covers

both the posterior surface of the cornea and the anterior surface of the iris, forming an anterior chamber cyst with a resultant glaucoma due to blocking of the filtration angle.⁵

Implantation cysts of the cornea have been investigated by Treacher Collins,⁶ who has demonstrated that after gunshot injuries of the eye ball, blows from tip, cuts and incisions for the extraction of cataracts, cysts, usually of small size, are liable to form in the cornea near the seat of injury. When examined microscopically, the inner walls of the cysts, are found lined with layers of cells identical with those covering the anterior surface of the conjunctiva. The structure of these cysts, with the history of injury, supports the view that they arise from conjunctival epithelium transplanted into the deep layers of the cornea.

Condon⁷ reported a case in which an egg-shaped implantation cyst was found on the anterior thoracic wall, partly within and partly upon the pectoralis major muscle; this cyst having its origin from a portion of the parietal pleura, which, at the time of a previous chest injury with fracture of underlying ribs, had been cut off from the rest of the pleura and forced out into the muscle tissue.

In our search of literature, not a single case of implantation cyst of the larynx was found. The ordinary cysts of the larynx are seen on the anterior surface of the epiglottis, within the larynx on the true cords, or on the lateral wall, in this order of frequency.⁸ They may be very small as on the cords, or of considerable size, as on the epiglottis. They are of two essentially different forms.

(a) Glandular cysts, which are very rare in the larynx, are found in those regions where the glands are abundant. They consist of walls lined with altered glandular epithelium, and are due to dilatation of the gland acini and ducts. Sometimes the original epithelium is so flattened and altered that it is difficult to make out the nature of the growth.

(b) Connective tissue cysts may be due: first, to a localized effusion of serum under the epithelium between it and the stroma, making a smooth shining, white protuberance which collapses when punctured, and may or many not reform. This is frequently the nature of the growth on the true cords; and second, the cyst may be due to the effusion of serum into the stroma, the cyst being traversed by fibrous threads and sometimes by fibrous bands.

Case report: Mrs. J. K., aged 58, white, American, was sent to the University Hospital February 24, 1916, by Dr. Scarborough of the State Tuberculosis Sanitarium, for examination of the throat.

His diagnosis was pulmonary tuberculosis, well advanced, of four years' duration.

Six months previously she began to have difficulty in talking aloud; since then she had recurring attacks of hoarseness which were gradually becoming worse, longer and more severe. There was no dysphagia and no pain on using the voice. There was a constant desire to clear the throat and sputum was considerable. She seldom had a cold, no sore throats, and the hoarseness was not associated with colds.

Examination of the larynx revealed marked inter-arytenoid infiltration with interference with the motion of each cord. A diagnosis of tuberculous laryngitis was made.

The treatment consisted: first, of Sanitarium treatment; second, rest of the voice; third, inhalations of steam with compound tincture of benzoin; fourth, 50 per cent lactic acid applied to the cords daily; and fifth, suspension and curetage of the diseased areas in the larynx every two weeks.

On June 29, 1916, four months after the beginning of the treatment, the larynx was declared to be apparently healed, and the patient was discharged.

On December 13, 1916, about six months after the patient was discharged, she returned for the routine follow-up examination. The patient had been gradually increasing in weight. Dr. Scarborough reported her lungs in excellent condition. Much to our astonishment we found a dome-shaped elevation in the interarytenoid space. There was no evidence of inflammation, and no interference with the movement of the cords.

On December 15, 1916, the patient was suspended, and the mass removed. The tissue was sent to Dr. Henry Albert for examination, who returned the following report:

"MICROSCOPIC PATHOLOGY OF SPECIMEN OF IMPLANTATION CYST.
Pathology Acc. No. 16,549.

A microscopic examination showed that the surface was covered with squamous epithelium which was practically normal. At a few places it was slightly thickened. A little below the surface in the underlying connective tissue was a small cystic process lined with squamous epithelium. The epithelium was of the same type as that which covered the surface. The cyst had no connection with the surface epithelium. The cyst cavity contained a small amount of granular material. The connective tissue surrounding the epithelial cyst contained a large number of young fibroblasts, indicative of a mild chronic inflammatory process.

Diagnosis: Implantation epithelial cyst.

The patient returned for examination January 10, 1917, and again on May 31, 1917. At each visit the larynx wound was found to be apparently well.

Summary: In cases of tumors of the larynx, following operative procedure upon the larynx, especially when not accompanied by evidences of inflammation, the diagnosis of implantation cyst of the larynx should be considered.

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Case of Reactivated Thymus. G. H. HOXIE, *Arch. Internal Medicine*, April, 1917.

Hoxie's patient, first seen at the age of 19, had been suffering for two years from shortness of breath. He had measles as a child; no other diseases except a headache about three to five times a year since 10 years of age. The patient vomited at the end of each attack. Formerly he was the "fattest" one in the family, but was now thin. Sleep was poor on account of a "stretching of the diaphragm"—evidently a feeling of constriction. The only important physical finding was increased submanubrial dullness. The roentgenogram of the chest showed an enlarged shadow in this area. The manubrium was resected and some pieces of thymus removed. The microscopic study of these showed the epithelialization described by Matti and Klose as characteristic of the reactivation of the adult thymus.

ED.

DIAGNOSIS OF SPEECH DEFECTS.

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It is necessary for the teacher who is to undertake the diagnosis of a speech defect to understand the essential differences on the one hand, between the organic disturbances of speech, such as arise from cleft-palate, organic lisping, nasality, fallen palate, high palate, very long tongue, faulty occlusion of the teeth, protruding upper jaw, protruding lower jaw, defective nasal breathing, dyspnoea or shortness of breath from either anemia, paralysis of the muscles of respiration or heart disease, and, on the other hand, the speech disturbances such as are found in aphonia, aphasia, stuttering, cluttering, neurotic lisping and negligent speech in general.

All sufferers from speech defects need kindly, sympathetic treatment. One of the causes of failure in the treatment of speech disorders is this lack of sympathy on the part of the physician or teacher who fails to grasp the tender situation. It makes no difference what your line of work is, you must start right. Do not incur the ill will of your patient. Remember that you are dealing in the main with people who are suffering from some nervous disorder. If their nervous derangement is not the cause of their speech defect, the speech defect will certainly have caused the nervous trouble. Nervous people have many peculiarities, one of which is the acquisition of personal dislikes for trivial reasons. However, they invariably respond most admirably to sympathetic and loving treatment. They usually crave affection.

When you have the patient before you for the first time, do not show too much inquisitiveness about his speech defect. Engage him in some conversation which will, for the time being, divert his attention from the main purpose of his coming to you. The reason for this is twofold, for if you begin at once with a conversation about the speech trouble, this becomes the prominent thought in his mind. As he is likely to be ideomotor, his speech will probably exemplify what he is thinking about, to an exaggerated extent. Nay, more, he is likely to manifest some speech defect which the unusual conditions have induced and to which he is not ordinarily addicted. In the second place, you will need to gain a great deal of your information by indirect methods; that is, from conversations about topics apparently unrelated you can get a good idea

of your patient's habits of life and of his past experiences. From these things you can frequently learn the definite cause of the trouble, and when that is learned you are more than half way on the road to its solution.

It is important that you keep an accurate *record* of each case, and that you note carefully each improvement. These records must also contain a minute account of each treatment, the frequency of the treatment and the kind of exercises performed. After all is said and done, a good deal of your knowledge will have to be gained empirically, and these records will be the most valuable means of attaining the required information.

The *age* of your patient is an important item. It is apparently unreasonable to expect a child of ten years to respond to the same treatment you use for an adult. The process of habit-building is a different matter in a child than in an adult. Your manner of conducting the exercises will have to be different. You will incur the dislike of an adult if you assume a class room attitude towards him. You will have to compile different reading and speaking exercises for an adult, for you cannot interest him in stories about cats, mice, and so forth.

Another point of importance is the *race* of the patient. Although individual variations within the race are sometimes greater than the difference between one race and another, the fact remains that there are racial characteristics. You will have to take these characteristics into consideration in your treatment.

A seemingly trivial, yet actually important item, is a record of the education of the patient, and the age at which he attended each educational institution. Of course, in dealing with a person of intelligence your problem will be different from that which you meet in dealing with an ignorant person. The avenues by which you can reach his interests are manifold, for he will be more likely to co-operate with you in your efforts to bring about an improvement. You can let him into your confidence. He will be able to give you private information in a more satisfactory way. The age at which he attended each educational institution will frequently give you an idea as to the cause of his trouble. If he has graduated at an abnormally early age you might infer that the trouble is due in a measure to the mental strain to which he has been subjected. There is no doubt in our minds that speech disorders have in a great number of cases been caused by forcing at school. It is sometimes the case, however, that the speech defective is backward in his school work. If you find that he is behind in his school work to

an unusual extent you are not unreasonable in inferring that the speech defect has a mental as well as a physical basis.

The age at which the defect was first noticed is hardly less important than any of the items mentioned above. If your patient is an adult who has stuttered since he began to speak, the chances are that the cause is congenital. Do not, as a matter of plain honesty, promise to cure him. The chances are at least three to one that you cannot do so, even in three years or more. The best that you can truthfully promise is that if he will co-operate with you and is willing to make many sacrifices of time and energy, you will reduce his defect to a minimum. You, on your part, will have to exercise the utmost patience in the treatment of such cases.

If your patient is young and has acquired the habit of stuttering at some period after school life began, your case is indeed hopeful. Try to find out if the mother or father stutter or ever did stutter; if there are brothers or sisters who stutter. If there are other members of the family who stutter they should, as far as possible, be kept from him. A few little experiments which we shall mention at some future time will reveal to you if the cause is in the patient himself or is merely the result of unconscious imitation. If the parents stutter, try to find out if his aunts or cousins stutter; if that is so, there is the likelihood that there is some inherited cerebral defect.

Inquire of his parents or teachers if his stuttering has been progressive. That is, has it become steadily worse, while his general health has appeared not to suffer? Such a condition sometimes indicates that a degenerative process has begun. However, this is seldom the case, but to be on the safe side you must have your patient submitted to a most thorough neurological examination.

It is essential that you have a record of every illness that your patient has experienced, the time of life at which he became ill, the duration of the illness, the length of the period of convalescence. We have before remarked that a speech defect is frequently the after effect of some severe illness. The length of the period of convalescence is important, in that it serves as an index of the vitality of your patient. A lowered vital tone is not infrequently the sole cause of aphasia and stuttering.

It is important to notice if your patient has been the victim of a severe shock or fright. Such a thing is likely to have a profound influence on the nervous system, hence on the speech function. Observe for yourself the general condition of your patient. Note his complexion; observe how he carries himself. Does he look you

squarely in the face? Is he afraid of the dark? Or is there any object which arouses the emotion of fear? If so, it is your duty tactfully to help him over this fear. By indirect and almost unsuspected methods find out about the parents. Are they sympathetic and loving, or do they try to govern by inspiring fear? If so, it is your duty to be frank with the parents. If possible, make the acquaintance of the family physician. Try to learn from him if there has been any lues in either of the parents and try to get whatever information you can as to the occurrences of paralysis, apoplexy, epilepsy, etc. The children of such parents contribute more than their proportionate share to the ranks of the stutters.

As before stated, it will be both of interest and benefit to have your patient examined by a nose and throat specialist. Adenoids and diseased tonsils should be removed and deflected septums should be corrected. Occasionally the cause of the stuttering is chorea of the larynx. In such cases you will be helpless to effect a cure of the speech defect until the other ailment has been cured. And so on, all other disorders must be carefully attended to.

Whatever you do, be careful as to your conclusion. A wrong diagnosis is not only of no benefit but is positively injurious. If you follow a method of treatment unsuited to the special case, you are likely to induce new speech defects.

Do not, for a moment, suppose that if a person is merely addicted to the habit of repeating a word or a part of a word, that he is a stutterer. There probably is not one of us, who has not, under some embarrassing circumstances, been guilty of this very fault. Such habits have not the regularity, nor is there the same cramp-like stiffness, that is noticeable in stuttering.

As we have already observed, the defect of speech might be due to some defects of the organs of speech. In such cases we have what is known as *organic lisping*. Stuttering is sometimes caused by lisping. We have had several patients who lisped and stuttered. One or two of them were tongue-tied. When the tongue band was cut, the lisping ceased as soon as the cut was healed. In less than a week later the stuttering disappeared. Of course, these were merely cases of physical stuttering, caused by the embarrassment over the lisping.

Many patients speak unintelligibly and in a mumbling tone from over-innervation of the muscles of speech. Sometimes the difficulty is with certain special sounds and this we term *neurotic lisping*. Often nearly all the consonants are mispronounced and this produces great nervousness and self-consciousness, which makes

the defect of speech resemble stuttering. This nervousness prevents the proper muscular co-ordination requisite for the correct sounds. Lispings differs from stuttering, in that the muscles are constantly at high tension.

There is a great deal in common between cluttering and stuttering; and one must be careful to distinguish between them. Great haste and slovenly articulation are the characteristics of the clutterer. He does not think of how he speaks; he phrases poorly and does not use his breath properly, all of which the stutterer also does, but with the clutterer it is carelessness and inaccuracy, while with the stutterer it is inability to perform these acts. If you ask the clutterer to think of what he is saying, he will invariably speak properly, but the more the stutterer is forced to think before a stranger, the more difficulty he experiences.

When you have a patient who shows spasmodic twitchings of the speech muscles, or spasmodic movements of the head or hands or legs, etc., you may conclude that his speech defect is due to chorea and this we call "tic speech," or "choreatic stuttering." This form of speech defect differs from the stuttering that constantly sticks for a while on certain consonants and has so much trouble in getting started. The "tic stutterer" catches and jerks at any moment; there is no regularity or system in the sounds he stutters over. A young man of 23, one of our patients, who has been afflicted with chorea from early childhood, has been a very bad stutterer all his life. This choreic stuttering has caused him to be so sensitive that he has until recently been a recluse in every sense of the word. We interested him first in physical culture, then in relaxation exercises, then in educational advantages, which he has shunned all his life, and although until six months ago he could never speak to a stranger and hardly could make himself intelligible to those nearest to him at home, he is now beginning to show such signs of improvement that one could scarcely believe it is the same individual who came to us for help.

Hysteria sometimes causes a speech defect that may be termed hysterical stuttering. "In one case a patient upon being asked a question, would hesitate a moment, turn her eyes to one side, and make a movement of the head as if she had just awakened to the question, and then answer with a slight difficulty at the start and every once in a while catch the breath while speaking. Hysterical patients also frequently have an aversion to certain topics and form peculiar associations with these topics, often finding difficulties in speaking about them. With them there is no cramplike action,

such as the stutterer has, and their speech difficulties do not manifest themselves constantly. Their voices, too, are unlike that of the stutterer, in that they are most always melodious and flexible. Another form of hysteria shows itself in many stutterers who are afflicted with a form of aphonia, which may be easily diagnosed by the expert. The tense straining of the vocal cords produces a hoarse, breathy voice after it has finally established vocalization.

"A person who is suffering from motor aphasia cannot call up the muscular co-ordinations requisite for the correct production of the sounds he wishes to say. Aphasia usually attacks a person who is advanced in years. Stuttering usually begins in childhood. Both are similar in their nervousness. However, in aphasia there is not present the excessive muscular tension or cramp that we observe in stutterers. The monotonous tone of the stutterer is also lacking.

"In the speech of general paralysis the sounds are often slurred over; there are no cramps in enunciation and single sounds are not repeated. Mistakes occur readily in the combinations of different parts of a word. For example, the paralytic patient says 'artrillery' or 'rartrillery,' but it will be said without cramps. A stutterer would say 'a-a-artillery' or 'art-t-tillery.' The paralytic can often speak the word correctly by trying very hard; the stutterer speaks better as he speaks gently."*

In diagnosing them we are to distinguish, *first*, the varieties and causes of dysarthria, or disturbances in articulation, *second*, the aphasias, and *third*, aphonia.

Under the varieties of dysarthria we have: 1. Disturbances in phonation: vowels and consonants indistinct. 2. Disturbances due to paralysis of lips, tongue, or palate muscles; nasal voice as if patient had pudding in mouth. 3. Bulbar speech. 4. Anarthria. 5. Bradyarthria and scanning speech. 6. Stuttering. 7. Lispings, negligent, organic, neurotic. 8. Stumbling speech. 9. Slurring speech.

Under aphasia we must distinguish between, (a) *motor*, and (b) *sensory* aphasia.

Under aphonia we must decide whether it is due to: 1. Hysteria; 2. paralysis of vocal cords; 3. paralysis of muscles of the larynx; 4. tumor of the larynx.

The two varieties of dysarthria, or disturbances in articulation are, first, the simplest form, that which results from an indistinct manner of pronouncing the various letters, both vowels and consonants; and, second, the one resulting from a paralysis of the several mus-

*"Stuttering and Lispings." E. W. Scripture. The Macmillan Co., New York, 1912.

cles concerned in the act of speaking. The former includes those defects that the trained teacher and psychologist must undertake to re-educate and the latter may be treated only by the physician. These defects of speech are to be met in the following diseases:

1. *Bulbar* speech is the name given to that type of speech which accompanies lesions of the bulb—a disease of the cerebral axis. The linguals, *d, l, n, r, s, t*, are badly pronounced in this disease.

2. *Anarthria* is the term applied to that form of speech which is absolutely unintelligible. In anarthria, which is neither aphasia or aphonia, the patient can emit sounds, but fails to articulate perfectly, since the facial-centers are paralyzed.

3. *Bradylalia*, slowness of speech, is characterized by the great deliberation and clearness with which each syllable is enunciated. It is characteristic of some imbeciles, of the child learning to speak, and even of some normal people who cerebrates with great slowness.

4. *Stuttering* is a spasmodic form of speech disorder. The muscles of speech are affected with cramps of spasms.

5. *Lisping* may be of three kinds. The negligent type is due to defective perception and execution of sounds; the organic type is due to abnormal condition of the speech organs; the neurotic type is due to functional disturbances and the temperament of the patient.

6. Slurring speech is synonymous with thickness of speech. It is especially evident following protracted and severe illness, such as typhoid.

In the excessive use of alcohol the speech varies from simple garrulousness to complete paralysis. The release of motor impulses is greatly accelerated, with the result that the patient repeats those phrases which are most familiar and which he has long since learned by heart. He is apt to make use of compound words and rhymes.

In the lowest forms of *idiocy*, babbling, grunting and echolalia are the characteristics. Lalling and stuttering are also frequent occurrences.

The speech of the *cretin* has neither characteristic difficulty or unusual tone. It is slow, labored, develops late and has a limited vocabulary.

The speech in *diplegia* (spasmodic paralysis of both arms or both legs, or of corresponding parts on both sides of the body) is slow and stuttering. If the condition appears in the very young, speech may never develop; if in older children, there is usually a gradual loss of speech.

The speech in *Friedreich's*, or *hereditary ataxia*, is slow, ataxic and scanning. The pitch of the voice is apt to change suddenly and as the disease advances a mental enfeeblement becomes evident, which further serves to modify the articulation.

The defects of speech due to *local disturbances* are those resulting from harelip and cleft-palate. In the former there is interference in the pronunciation of the labials, and in the latter there is an interference with the palatal letters, accompanied by a nasal snort.

The speech in *multiple sclerosis* is peculiarly diagnostic. While the tone is monotonous, the enunciation of the words is clear and measured. It can best be designated by the word "scanning," as its tones recall the scanning of a line of Virgil. Scripture describes it as bringing out each syllable with a distinct effort, but without the characteristic anxiety of the stutterer. Oppenheim says that the patient speaks like a child spelling out letters. Another word that has been used in connection with it is "staccato."

The speech in *general paresis* is best described by the words ataxic, stumbling and alliterative.

In *brain tumors* the speech may or may not be affected, according to the location of the growth. It must always be borne in mind that if the patient is left-handed, a tumor situated in the right hemisphere will give all the symptoms of one in the left hemisphere of a right-handed man.

The speech in *hemiplegia* is often involved. The character of the defect differs according to the location of the lesion.

The speech in *chorea* is jerky and irregular. The words are broken and, being affected by the breathing movements, come forth in a violent and aggressive manner. They are hurled forth. This defect of speech is more evident in the chronic forms, but to a slight degree does exist in the acute types. In the advanced and aggravated cases the patient may be unable to speak at all.

The speech in *epilepsy* is neither characteristic nor distinctive, although in some cases monotonous. In many instances the enunciation is thick and indistinct, due to the fact that the patient is suffering more from overdose of bromide than from epilepsy.

The speech in *paralysis agitans* can best be compared with the gait of *paralysis agitans*. As the patient festinates in his walk, so does he festinate in his talk. He is slow to begin, the lips are open, great deliberation is displayed, there is hesitancy, and at last, slowly and deliberately, the first few words make their appearance. Then he speaks faster and faster until finally the words seem to tumble out after each other, so rapid and explosive is the utterance. An-

other feature of this condition is the change of voice. It becomes shrill, high pitched and piping.*

It is truthfully said that a person who is unsympathetic has no right to be admitted to the teaching profession. If this is so for the teachers of normal children, it is a hundred times as applicable to the teachers of speech defectives. Frequently they are the victims of ridicule, embarrassment and their own peculiar mental traits. As a rule people do not care to associate with them and they find themselves like Pariahs. They come to you for help. You can help them almost as much by your sympathy as you can by your therapy; and it is no small satisfaction to know that you are adding some little pleasure to the life of the afflicted.

Always find out whether your patient is left- or right-handed; if so, whether he was born so.* If left-handed, try to discover the attitude taken toward it by parents and teachers. Note all this information. Ask every patient if there is any left-handedness in the family anywhere. The cause of a speech defect may be sometimes traced to this heredity.

Conclusions: To examine the patient's speech it is necessary first to have him speak, next to have him read aloud, and, lastly, to have him repeat some test phrase. Examine his speaking ability while he is telling some of the history of his case, so that his attention will be distracted from what you are trying to discover. In reading aloud, give the patient something suitable for his age, race, environment and education, etc. In repeating the test phrases he should be given plenty of opportunity to hear and comprehend the significance of the words and then be asked to repeat them after the examiner.

For the general diagnosis of our clinic patients we use the following original sheet, so that facts may be collected for accumulating data toward scientific deductions. Special examinations for lispsers and for stutterers are also added.

SHEET FOR DIAGNOSIS OF SPEECH IN GENERAL.

Mutism: 1. Backwardness. 2. Mental Deficiency. 3. Hysteria.
4. Aphasia.

Falsetto: 1. Physical. 2. Defective Imitation.

Defective Enunciation: 1. Negligent Enunciation. 2. Organic
Lisping. 3. Neurotic Lisping. 4. Cluttering. 5. Mental Deficiency.

Monotonous Voice: 1. Stuttering. 2. Epilepsy.

* E. Livingston Hunt, *Diagnostic Symptoms in Nervous Diseases*.

*Left-Handedness as an Etiological Factor in Speech Defects. Mrs. May K. Scripture, Dr. Otto Glogau and Arthur DeBra. Reprint from the *Laryngoscope*, St. Louis, March, 1917.

Hoarse Voice: 1. Laryngeal. 2. Stuttering. 3. Hysteria.

Rapid Speech: 1. Stuttering. 2. Mania.

Slow Speech: 1. Melancholia.

EXAMINATION OF STUTTERERS.

1. Speak: Name, Address, Age, etc.

2. Read Appropriate Paragraph.

3. Repeat Test Phrases:

I'm feeling very sick to-day.

I'd like to go home.

Hippopotamus.

Peter Piper's peppers.

Gathering shells at the seashore.

Third Riding Artillery Brigade.

Methodist Episcopal.

Hippopotamus hurrying home.

Repeat these phrases three times in succession.

Note that: 1. The normal speech is free from any idiosyncrasy; there is no blurring or elision of syllables. 2. It is noteworthy neither for slowness nor rapidity. 3. The words are expressed in a clear, straightforward manner. The tongue and lips are free from any tremor. 4. In testing speech it is important to observe the manner of expression, the speed with which the patient talks, the clearness with which he pronounces the different words, and the absence of any elision or slurring. 5. Ask the patient to say these phrases in a room all by himself while you step into the hall or some nearby room, where you may still hear. Almost invariably the stutterer will say them perfectly when he thinks he is absolutely alone.

EXAMINATION FOR LISPING AND NEGLIGENT SPEECH.

P. pay, pie, pen; deep, help, cap; apron, apple, helping.

B. bad, bug, bite; crab, tub, crib; obey, lobster, ribbon.

M. mad, milk, must; beam, come, room; mama, moment, hammer.

T. table, toe, train; boat, nut, what; letter, water, butter.

D. dark, day, doll; load, made, rude; cradle, bundle, harder.

N. name, nice, north; alone, gun, pan; Annie, corner, money.

K. cat, cup, king; cake, duck, like; drinking, market, picnic.

G. gay, go, get; bag, egg, frog; again, organ, bugle.

Ng. singing, running, living; singer, ring, being.

Ch. chair, chicken, child; much, peach, church; butcher, teacher, pitcher.

J. Jack, Jill, jump; bridge, edge, fringe; Roger, unjust, enjoy.

- F. face, fine, fun; if, hoof, leaf; coffee, office, afraid.
 V. vest, vote, very; above, drive, hatred; ever, every, river.
 S. sack, seed, sleep; dress, lace, rice; assist, basket, master.
 Z. zoo, zone, zebra; bees, nose, trees; busy, lazy, scissors.
 Sh (surd). shade, shelf, shirt; bush, fish, sash; bushel, washing, brushes.
 Sh (sonant). azure, measure, pleasure; vision, leisure, division.
 Th (surd). thank, thin, thick; bath, earth, mouth.
 Th (sonant). thou, they, these; bathe, smooth, breathe.
 W. wad, wolf, wagon; towel, power, lower.
 Y. yard, year, yes; yellow, young, yacht.
 Wh. why, what; which, whose; when, where.
 R. race, ride, run; arrow, parrot, hurry; braid, crab, grape.
 L. leaf, low, lip; animal, bowl, call; along, eleven, island.

SHEET FOR THOROUGH DIAGNOSIS OF A STUTTERER.
 DIAGNOSIS.

Name Date
 Address Nationality
 Age Sex
 By whom sent Education
 Occupation

Age at which defect was first noted.....
 Family history

ETIOLOGY.

Children's diseases Speech conflict
 Imitation Puberty
 Traumatic shock Environment
 Left or right handedness..... Habits

MENTAL STATUS.

Special senses
 Attention and response

PHYSICAL STATUS.

Orthodontic symptoms

Nasals Posture.
 Tonsils Winging Scapula
 Palate Relaxation of Abdomen.....
 Jaws Lumbar Curvature
 Tongue Shallow Upper Chest
 Glottis
 Teeth

Physiological

Respiration Osseous.
 Vascular Height Weight
 Viscera Retrognathism
 Appetite Hair Skin
 Digestion Subcutaneous Tissues
 Enuresis Muscles Tonus
 Mobilization of Fats and Proteins...
 Ductless Glands

COPPER BRAD IN THE LEFT INFERIOR BRONCHUS. REMOVAL.

DR. RICHMOND MCKINNEY, Memphis, Tenn.

Every case of bronchial foreign body brings with it a lesson, and those who have had much experience in this work realize that every individual case may present its own problem in removal. The case which I am to describe was to me more than ordinarily difficult, and this leads me to present a report of it in detail.

On May 9, 1917, Freda L., aged five years, of Lexa, Arkansas, was referred to me by Dr. P. M. Farrington, of Memphis. Four weeks prior to this the little girl had insufflated into the trachea a copper brad from an old suitcase. For several days subsequently she had had a cough and some fever, and as the parents were not absolutely positive that the child had not coughed up the foreign body, she was kept under observation for a while by the family physician, who thought that the condition possibly might be a bronchitis. The symptoms not clearing up, the parents were advised to bring the child to Memphis.

Dr. Farrington obtained a radiograph of the child's chest, and this showed the brad just at the bifurcation of the trachea. The child was prepared for bronchoscopy, which was done at the Lucy Brinkley Hospital the next morning, light ether anesthesia being used. The Jackson five-millimeter bronchoscope was passed to the carina, and the foreign body not being seen, the tube was gently passed a short distance down both the right and left bronchi, without revealing the brad. It was not deemed wise at this time to conduct the search further, without securing another picture of the chest, as it was assumed that the foreign body either had been coughed up, or else had gone deeper into some portion of the bronchial tree. The afternoon of the day of the examination the temperature went to 101°, and marked symptoms of acidosis had set in, with protracted vomiting and depression of the little patient. This condition was treated with a five per cent soda solution, administered continuously by Murphy drip, and she was given soda water to drink. The acidosis symptoms cleared up in about forty-eight hours, but there continued to be temperature fluctuations, and there were numerous rales in her chest. The little girl being greatly

improved, on May 16, which was just a week after she was bronchoscoped, her mother was told to take her home and feed her up for a few days, until she could be put in condition for another examination. While she was still in the hospital, a picture was made by

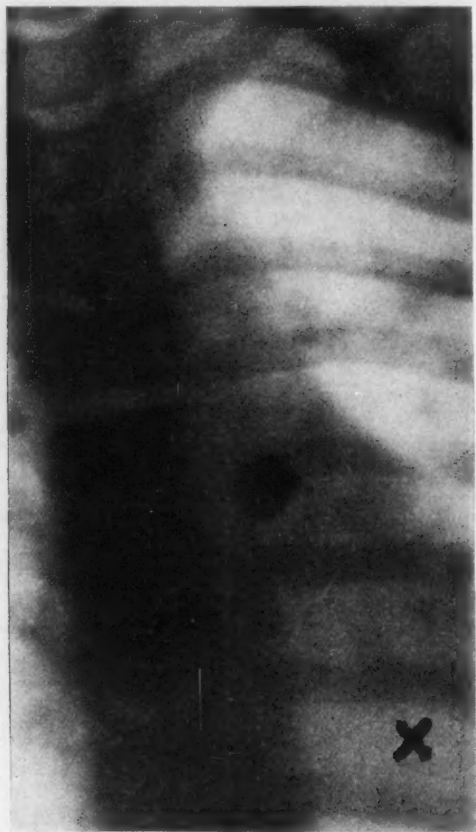


Fig. 1. Radiograph shows the location of brad at the time the second picture was made. Location of brad at time of removal is indicated by the X, made between the eighth and ninth ribs.

Dr. W. S. Lawrence, and this showed the foreign body to be in the left main bronchus, about opposite the sixth rib, as shown in the accompanying radiograph. The brad, which was described by the mother as having an oval head and a long prong, was shown to be

lodged in the left main bronchus, with its oval surface up, and from the size of the brad I knew that it must completely fill the lumen of the tube, so I realized that the problem of grasping it was going to be a difficult one, since the beak of the forceps probably would slip on this smooth, rounded surface, and there would be danger of tearing through the bronchial wall when an attempt was made to grasp the edge of the brad.

On May 23, the little patient was again brought to the Lucy Brinkley Hospital, the temperature on admission being $100\frac{1}{4}^{\circ}$. Chloroform anesthesia was used this time, owing to the fact that there was a great amount of mucus and pus being expectorated. The bronchoscope was introduced and carried down to the foreign body, which was seen, but being so much wider than the lumen of the tube, it was decided to guide the end of the tube and forceps fluoroscopically, with the assistance of Dr. Lawrence. But as anticipated, the forceps would not hold the brad, and it would slip away, so after several attempts of this kind, fearing to further imperil the child's life, we ceased our efforts. There was considerable reaction after this intervention, but no symptoms of acidosis, and in three days the little girl was returned to her home in Arkansas, with instructions to her mother that she should be kept quietly in bed for a while, built up again with plenty of food, and that I would make another attempt to remove the brad at a later date.

On the morning of June 23, the child being in most excellent condition, with light chloroform anesthesia, and again using the fluoroscope, we prepared to make a final, and, we hoped, successful attempt to remove the brad. The fluoroscope revealed to our surprise that the brad had passed even further down into the bronchus, and apparently was now at the bottom of the inferior lobe bronchus, for it was located between the eighth and ninth ribs, being more than three inches below the child's nipple. However, this made us all the more desirous of removing the brad. Jackson's five-millimeter bronchoscope was passed down to the brad, which I found covered with granulations, and then using the Jackson long alligator forceps, I successfully kicked the brad over with the end of the forceps, caught it by its edge, and rapidly withdrawing tube, forceps and brad together, pulled the brad up into the trachea, where it became dislodged from the beak of the forceps, but with a slight cough was expectorated into the waiting hand of Dr. Louis Levy, who assisted me in the operation. The child returned home the next day, there being no reaction whatsoever, and recently was reported as having entirely recovered.

In this case there was a clear illustration of the suction of a foreign body deep into the bronchus through negative pressure, and the brad was held in the extreme end of the left inferior lobe bronchus in a manner that precluded any possibility of its being coughed up, unless an abscess had formed, with the coughing up of pus containing the foreign body. But of course, had an abscess formed, the consequences most likely would have been death to the child. The essential difficulty presented in this case was in securing a grasp of the foreign body, which, had it presented its central prong upward, would have been simple, but, toadstool-like, a smooth and rounded surface presented, and this filling the entire lumen of the bronchus, measuring, as it did, eight millimeters in diameter, I felt quite lucky in being able to, as it were, capsize the brad with a kick of the end of the forceps, without doing material damage to the lung, and thus have a presenting edge to grasp with the forceps. The diameter of the bronchoscope being so much less than that of the brad, the use of the fluoroscope facilitated the accomplishing of this end. Another point which is emphasized in a case of this kind is that upon which Jackson and other experienced bronchoscopists dwell, and to which I have on several occasions added my own voice, that bronchoscopic endeavors should not be continued for a protracted period. While a patient might undergo several ten or fifteen-minute seances without serious consequences, a long continued attempt at extraction, with the danger of the anesthetic, should it be used, the liability to occasion an inflammatory reaction in the lung through traumatism, and, I may say, this being a factor not to be overlooked, the nervous state that even the most phlegmatic operator may be worked up into when his repeated efforts fail to reveal or secure the foreign body, may in itself be the innocent cause of some physical damage being done to the patient which may occasion a fatal termination.

Bank of Commerce Building.

**A CASE OF EMPYEMA OF THE LEFT ETHMOID AND
FRONTAL SINUS WITH PERFORATION OF
THE INNER WALL OF THE ORBIT.**

DR. EDWARD R. ROBERTS, Bridgeport, Conn., AND DR. THOMAS J.
HARRIS, New York.

This case seems of especial interest because of the suddenness of the onset, the rapidity of its progress, the nature of the infecting organism, the point of perforation and its ready response to surgical intervention.

The history and case record is as follows:

M. L., 16 years old, a student, was admitted to Dr. Harris' service at the New York Post-Graduate Hospital, December 20, 1916.

Present illness. Patient's chief complaint on entering the hospital was of pain and swelling in the region of the left eye.

Operations. Tonsillectomy; adenoidectomy 5 years ago.

Inspection shows a well-nourished boy, rather large for his age, evidently in great pain and extremely toxic, appearing at times semi-delirious. The left eye is completely closed by an intense edema of both the upper and lower lids. There is slight edema of the lower lid on the other side. The left forehead, but especially over the area usually occupied by the frontal sinus, is swollen, edematous and painful to the touch. Condition similar to that about the eye extends down the left side of the nose to a point level with the floor of the orbit. The swelling over the left frontal does not differ from a case of perforation of the outer plate due to the erosion of purulent disease of the sinus beneath.

Palpation determined a condition of edema extending well back to the posterior parietal region. The whole area involved except that of the scalp, presented an appearance of what might well have been taken for an erysipelas.

Nasal examination showed an acute rhinitis, muco-pus in the right nares, with distinct evidence of pus in the left, especially about the anterior end of the middle turbinated body and in the middle meatus. The second turbinate presented the appearance of having had some surgical operation, but no such history could be elicited.

The patient was admitted to the hospital at 4:30 p. m., December 20, with the intent of immediate operation, but consent of the parents necessary for proceeding, could not be procured. Temperature, 104.6; pulse, 112; respirations, 22. Nasal irrigation started a thick cloudy return with some pus. An ice cap was applied. The blood picture on admission showed a white count of 32,950; 75 per

cent of which were polys, 19 per cent small lymphocytes, transitional cells 6 per cent. Patient was extremely restless that night, but was not in great pain.

This illness was said to have begun December 17, 1916. The first symptoms noted were pain about the left eye and over the frontal sinus. Monday, December 18, a physician was consulted who seems not to have made a diagnosis. That evening swelling began, so that by Tuesday, December 19, the left eye became completely closed. The same doctor was again called and this time advised hospital treatment. The condition gradually grew worse, the patient presenting himself at the hospital the next day. Home treatment had consisted of hot compresses to the region of the left eye, massage with camphorated oil, eye drops and presumably anodynes internally. Consent to an operation having been obtained the next day, operation was immediately performed, the description of which is as follows:

After nasal irrigation and an iodine preparation of the skin surface, the left eye-brow was split by a one-inch incision which was at about the center of the line of greatest swelling. There escaped perhaps one and one-half ounces of thin yellow serous fluid, not pus, containing many long shreds of coagulated material. This incision was carried inward to a point $\frac{1}{4}$ in. from the midline of the nose, and another, one inch in length, carried upward from this inner end and at right angles to it. This second incision was necessary to procure a sufficient exposure, as the subcutaneous tissues here were fully an inch in thickness and would permit only the slightest degree of retraction. After elevation of the periosteum, diligent searching found no perforation in the anterior wall of the frontal, nor of its orbital wall as was later shown, but small amounts of pus were at times, together with what appeared to be air bubbles, exuded through the supraorbital foramen. The front sinus wall presented a bluish area which point was elected as the point of entrance. It proved to be over about the center of the cavity. Removal of the anterior wall disclosed a pus-filled sinus, about one inch in its lateral dimensions, not remarkable in its other dimensions, free from septa and containing no granulation tissue. The naso-frontal duct could not be found. The roof of the orbit was not removed as in the radical Killian operation as haste seemed the chief indication, the patient's general condition not being good. The breathing was very bad and the pulse about 150, decreasing in volume.

The frontal sinus was therefore cleaned of its mucosa, irrigated and temporarily packed. The second incision mentioned above was then prolonged downward midway between the inner canthus of the eye and the midline of the head to a point opposite the floor of the orbit and free elevation of the periostium toward the eye side was made. Elevation was an easy matter, both in the nasal side and roof of the orbit. Examination disclosed an orbital perforation leading to the anterior ethmoid cells at a point in the lachrymal bone just posterior to the lachrymal fossa. This opening was enlarged to one-half a square inch and the ethmoid labyrinth completely exenterated by the nasal route. Only a few stitches were used, closing the outer angles of the T-shaped wound described. The frontal sinus was packed, a drain inserted into the nose through the orbital opening, and the left nares lightly packed, iodoform gauze being used. At this point hypodermoclysis seemed indicated and 400 c.c. of saline were given under the left breast.

Laboratory findings. Dec. 20. Differential count, 32,950 white; polys, 75 per cent; transitionals, 6 per cent; small lymphocytes, 19 per cent; large lymphocytes, none.

Dec. 21. Urine acid, amber. Sp. gr. 1022; albumin, faint trace; sugar negative. Sediment showed occasional hyaline casts and a few epithelial cells.

Dec. 22. Sp. gr. 1020. Albumen, faint trace. Many hyaline and granular casts, few white blood cells. Differential count, 17,200 whites, polys, 69 per cent; eosinophiles, 2 per cent; transitionals, 15 per cent; lymphocytes, 14 per cent; small lymphocytes, none.

Dec. 27. Urine alkaline; Sp. gr. 1020. Sugar and albumen negative; no casts. Few white blood cells.

Dec. 28. Differential blood count, 32,400 white; polys, 88 per cent; hemoglobin, 55 per cent; red count, 3,320,000.

Bacteriological findings. Dec. 23. Smears from sinuses showed staphylococcus aureus. Blood agar used.

Dec. 28. Round colonies on blood plates; few on each plate, with areas of hemolysis about each. Microscopic examination showed staphylococci. Larger colonies showed yellow pigment.

Dec. 29. Culture for vaccine taken.

Dec. 30. Swab from right nostril. Cultural examination showed staphylococcus aureus on blood and plain agar.

X-ray report. Dec. 26. X-ray showed slight reduction in illumination of left frontal sinus, partly due to dressings and imperious substance in gauze. The septa of the left ethmoid said "to be ill defined suggesting an ethmoiditis," but probably the results of its surgical treatment.

Post-operative treatment. Dec. 21. Morphia gr. 1-6 given during the night for pain; temperature, 105.2 (represents the maximum for 24 hours); pulse, 112; respirations, 22.

Dec. 22. Highest temperature of illness, 105.8; pulse, 114; respirations, 24. Drain removed from nares.

Dec. 23. Laxative. Morphia, 1-6; temperature, 105; pulse, 100; respirations, 24. Complete dressing changed. Nasal irrigation started every 4 hours.

Dec. 24. Lumbar puncture with negative results. Chest pain complained of due to hypodermoclysis. Complete dressing done, still using iodoform.

Dec. 25. Outer dressing changed. Temperature, 104.8; pulse, 100; respirations, 20.

Dec. 26. More comfortable. Temperature, 104.8; pulse, 104; respiration, 30. Complete dressing; suction used productive of results; nasal irrigation omitted.

Dec. 27. Codeine gr. Laxative. Outer dressing done; temperature, 104.8; pulse, 108; respirations, 28.

Dec. 28. Complete dressing following a good night with much sleep. Temperature, 104.6; pulse, 104; respirations, 26.

Dec. 29. Comfortable night. Magnesium sulphate. Changed outer dressing. Temperature, 104; pulse, 108; respirations, 26.

Dec. 30. Comfortable night. Temperature, 103.6; pulse, 104; respirations, 20. Complete dressing; staphylococcus vaccine started.

Dec. 31. Comfortable night. Temperature, 103; pulse, 104; respiration, 20. Slight bronchitis developed; outer dressing changed.

Jan. 1. Bronchitis rather worse. Complete dressing. Temperature 102.6; pulse, 108; respirations, 22.

Jan. 2. Comfortable night; outer dressing changed. Temperature, 102; pulse, 116; respirations, 24. Vaccine given; back rest given.

Jan. 3. Some coughing during night. Temperature, 102; pulse, 96; respirations, 20. Strychnine started as circulatory stimulant; complete dressing.

Jan. 4. Temperature, 102; pulse, 88; respirations, 22; outer dressing. Vaccine given.

Jan. 5. Complete dressing; patient very comfortable. Temperature, 101; pulse, 88; respirations, 22.

Jan. 6. Outer dressing; patient in chair. Temperature, 100; pulse, 88; respirations, 22. Vaccine given.

Jan. 7. Complete dressing; comfortable. Temperature, 99; pulse, 112; respirations, 28.

Jan. 8. Outer dressing; tonic started. Temperature, 99.6; pulse, 96; respirations, 18. Vaccine given.

Jan. 9. Complete dressing; improved. Temperature, 99; pulse, 96; respirations, 18.

Jan. 10. Outer dressing. Temperature, 100; pulse, 88; respiration, 20. Nasal irritation used with no pus in return. Vaccine given.

Jan. 11. Temperature, 98; pulse, 72; respirations, 20. Complete dressing.

Jan. 12. Temperature, 99.6; pulse, 72; respirations, 80; outer dressings changed; nasal irrigation cloudy, but no pus. Vaccine given.

Jan. 13. Temperature, 99.4; pulse, 88; respirations, 20. Complete dressing.

Jan. 14. Temperature, 99; pulse, 77; respirations, 20. Complete dressing; very comfortable. Vaccine given.

Jan. 15. Patient discharged from hospital to out-door clinic.

Subsequent history from time of discharge from hospital.

Uninterrupted progress in the healing of the wound in the orbit and frontal sinus; orbital wound closed completely in the course of two weeks; sinus closed in one month's time. There was a gradual cessation of the discharge from the left nostril until it entirely ceased. At this time the patient began to complain of pain over the center of the forehead below the hair line. Here a well-defined swelling was to be noted. This gradually increased until fluctuation could be detected. Opened by an extension of the original vertical incision and drained of a considerable amount of pus. The abscess was entirely separate from the original wound. There was a superficial necrosis of the frontal bone. This abscess was followed later by another large abscess within the hair line, requiring opening, packing and drainage and still others scattered over the head, the last one being located in the left temporal area. Repeatedly, fragments of bone were thrown off. The general health of the patient, however, continued good and there was no return of the temperature at any time. The case was undoubtedly one of osteomyelitis. The use of the autogenous vaccine seemed almost a specific. It was discontinued for a time but with its resumption the abscesses ceased to form. The patient has been kept under observation up to the present time but has returned to work and regards himself entirely well.

The case is of interest for several reasons.

First: The pronounced infection accompanying the orbital perforation is not such an exceedingly rare complication of ethmoidal disease. It has been noted, especially by ophthalmologists, for many years, but the high temperature, cloudy intellect, pronounced swelling, high blood count, etc., all caused hesitation in excluding a meningeal complication.

Second: The nature of the organism, i. e., staphylococcus aureus. This, at the time that the case was first reported, was supposed by us to be very uncommon. While not approaching the streptococcus infection in frequency, nevertheless, during the past winter, a number of such infections have been seen in our several hospitals. Its presence in acute disease of the ear has added pronounced gravity to the case.

Third: The extensive sinus and bone involvement. Both ethmoid cells and frontal sinus were filled with pus. Pus also had ferrited its way from the orbit underneath the periosteum of the frontal bone over a considerable area. The profound intoxication in the case is evidenced by the immediate post-operative history; the high temperature persisted for some days. There were suggestions of meningitis, metastatic bronchitis and penumonia, sufficient to call for a spinal puncture. These complications were found, however, to be absent.

Fourth: The complication of osteo-myelitis. This proved to be almost endless, so far as the formation of abscesses was concerned. One was no sooner healed than another formed. The value of the vaccine for this was abundantly demonstrated. In this particular the case resembles the case reported by Dr. Henry L. Lynah in the March, 1917, number of THE LARYNGOSCOPE. In his case, however, the infection was far more intense and the results correspondingly more disastrous.

A single word in regard to the operative procedure. It will be noted that the frontal sinus was drained externally and the ethmoid cells exenterated intranasally. We would not recommend this as a routine procedure so far as the opening of the ethmoids is concerned. In this particular case, however, the gravity of the condition, the high temperature at the time of operation, the weak pulse, the necessity of speed, caused us to select the intranasal route as the one by which we could more speedily accomplish the results desired. After the first dressing a through and through wick was introduced from the orbit to the nose, which gave satisfactory drainage.

376 John Street.

104 East Fortieth Street.

MACROGLOSSIA LYMPHANGIOMA WITH REPORT OF CASE.*

DR. RAYMOND D. SLEIGHT AND DR. WILFRID HAUGHEY, Battle Creek, Mich.

Helen P., a six-year-old Polish girl, was referred January, 3, 1916, by Dr. J. J. Holes, of Battle Creek, for treatment of her tongue. The teeth are badly decayed and foul. There is no history of tuberculosis or syphilis in the family. There are two other children, younger, but in apparent health.

When six months of age, and while living in Poland, Helen was vaccinated and also had the frenum linguae clipped. Following this the family noticed that her tongue enlarged and seemed to have a growth on it. This condition has been present ever since, but has remissions of varying lengths of time when the tongue is normal in size, and the growth continually present. The child has been treated both in Poland and America without benefit, and according to the family without a diagnosis.

When the girl was first seen the tongue protruded from the mouth about an inch, and could not be returned. The whole surface of the tongue to the very root—dorsum, sides, tip and under surface—was covered with what looked like a superficial growth made up of vesicles of all sizes from the most minute to the size of a small pea. Many of these vesicles were of a purplish color, with a thin necrotic spot on top, appeared distended, and ruptured at the slightest provocation—even crying would and did rupture many of them, filling the mouth with an excessive amount of bloody serum, which did not clot, and was out of all proportion in amount to the size of the vesicles.

The parents said the tongue had been in that condition for two days, that it had been in similar condition a number of times before, but not so bad, and that it always got better in about a week.

The child was placed on ergot internally, with cold boracic packs to the tongue, and cleansing the mouth and teeth. Diagnosis, lymphangiomatous macroglossia. After four days the tongue had returned to the mouth, was soft to the touch and was nearly normal in size. There was still a superficial growth, spreading over the tongue.

*Read before the Detroit Oto-Laryngological Society, January 17, 1917.

During the quiescent stage we removed a small piece under cocaine and sent it to Dr. Warthin of Ann Arbor, for diagnosis. This was on February 2, during the evening. There was but very little serum in the nodules that had previously been vesicles or cysts. The growth did not bleed abnormally. Next morning he found the tongue was swollen like a monstrous ripe blackberry, foul, smelling, bleeding, protruding about three inches from the mouth, surface dry, and covered with cysts containing an excessive amount of bloody serum, red spaces between the cysts. When broken, these cysts had formed crusts which had dried and cracked. The child could swallow with extreme difficulty. She was again placed on ergot and cold packs, and four days later the tongue was back to its normal. The haemoglobin at this time was 70 per cent by the Talquist scale.



Fig. 1.

Again on March 8, the tongue enlarged, and developed a few bloody cysts. This attack was mild, and there have been no further severe attacks. The photograph was taken during this mild attack. The pathologist's report was "macroglossia lymphangioma simplex cystica congenital."

The photomicrographs are fairly typical of the microscopic picture. There is a new formation of connective tissue with lymph spaces of irregular and racemos shape scattered all through. There are also collections of round cells about the blood vessels, some of the smaller of which are also occluded.

Frequency. Macroglossia is seen infrequently, but the lymphangiomatous form is rare. In 1897 Brocq (1) and Bernard reported

a very rare lesion of the tongue, vesicles miliary to the size of lintel, a little point partly transparent at the center, of violet color, not tender. The malady undergoes changes, a sort of turgescence which lasts three or four days. This was thought an unique case, but they found five others mentioned in the literature, by L. Baldy, Bryant, Butlin and Sumter. "Macroglossia due to lymphangioma is a rare disease." Hurry (2).

Lymphangiomatous macroglossia was apparently unknown until 1854, when Van Lew reported a case with the "substantia propria of the tongue greatly indurated, and the veins widely dilated." Next year Van Oye and Van Biervliet reported another case in the *Annals d. l. Soc. des Sciences de Bruges*, making no further contribution to knowledge." Kahn (3).

Cases have also been reported by Arthur E. Barker (4), W. G. Stone (5), E. R. Carling (6), Tenneson (7), and others.

Etiology. Lymphangiomatous macroglossia is congenital, but the enlargement of the tongue may follow injury. Dollinger (9) reports a case in a man of 22 that followed the division of the frenum at the age of two. Sedillot (10), reports a case in a boy of nine following operation on the lower jaw. In very many cases it has been made worse by the inflammations set up by the treatment. Butlin (8).

In a few cases there have been actual proof of disease of the lymphatics in parts neighboring to the tongue. Virchow (11) tells of a girl of two years, who with macroglossia, had an enlarged gland beneath the tongue containing clear lymph. Maguire (12) tells of a girl of two with cystic hygroma on both sides of the neck, studied post mortem. Valenta recorded a somewhat similar case. Winiwarter (13) had a case of congenital macroglossia, accompanied by congenital hygroma in the neck. Brault (14) had a patient whose macroglossia was accompanied by lymphangiectasis in the floor of the mouth and of the cervico-facial region. Tenneson (7) reported a case in a man of twenty-three whose macroglossia was first noticed when four months of age. He had a venous naevus of the lower lip, one of the neck at the level of the hyoid bone, and a caoillary naevus on the ear. Maas (15) had a case with venous naevus of the lip and tongue, followed by macroglossia.

Etiology of macroglossia congenital is not at all clear. According to Kuhn (3), three factors influence it. 1. Dilatation of lymph vessels; 2, true growths of lymph vessels; 3, combination of the other two conditions.

There are various theories: Lucke—Injuries causing blood to exude into lymph spaces. Wegner—that the hypertrophy of the tongue is due to dilatation of the lymph channels causing general swelling, this in turn causing stasis in veins whose walls become thinned in consequence. In connection with the large lymphatic sacs with ectatic veins whose contents are compressed under high pressure, causing disappearance of interstitial tissue, its thin walls become eroded, then burst, possibly from some external pressure or trauma, and there results, probably, intercommunication between veins and lymph channels. Kuhn (3).



Fig. 2. Low power. Lymphangiomatous Macroglossia.

Other etiological factors are: Following ranula operations, Leah (16); after clipping the frenulum, Percy, Sedillot, Moller, Scultet and Treteau saw macroglossia follow salivation with mercury; Unger, one following scarlet fever; and Bierkander and Alibert following small pox. Kuhn (3).

Regarding the theory of lymphatic obstruction, Butlin (8) says, "There is no answer as yet to the question why the disease tends to spread to the whole tongue. Mikulicz seems to regard lymphangioma as a new formation of lymph vessels which dilate into spaces. The analogy to elephantiasis as pointed out by Varchow (11) still seems the most likely explanation.

Pathology. Lymphangioma, or lymphatic naevus appears on the surface of the tongue as a group of vesicles which have transparent walls with clear fluid. Between the vesicles are bright red points made by capillary loops. If a vesicle ruptures, clear fluid escapes. If a capillary ruptures into a vesicle, it becomes distended with blood, causing the distended vesicle to assume a bluish black appearance. The lymphangioma may be a very small patch or cover a considerable portion of the tongue, or form a sort of crest like a cockscomb. It may project from the surface or extend deeply into the substance of the tongue.

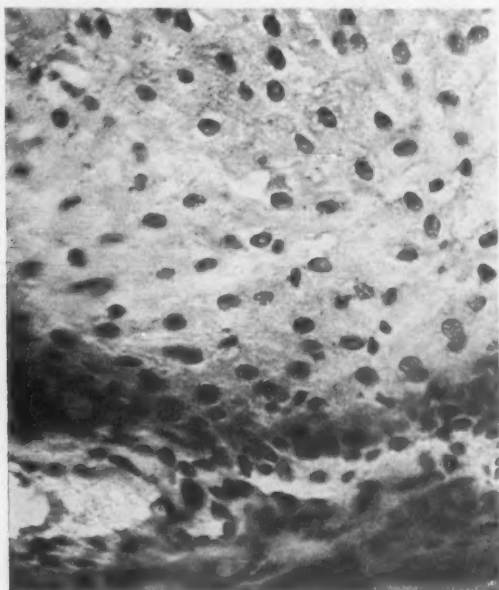


Fig. 3. High power. Lymphangiomatous Macroglossia.

Lymphangioma may be either of three forms: 1. Capillary loops develop into arteries, thin-walled, coiled and of considerable size. The veins also increase. The blood vessels rupture into the lymphatic spaces, which become distended partly with circulating blood and partly with blood clot. 2. Dilatation of the lymph spaces is accompanied by inflammation. Round cells infiltrate the connective tissue and tough fibrous tissue increases and slowly surrounds the spaces. The inflammation is subject to sharp increases accompanied by extravasations of blood, then it subsides, but to

recur again and again. With each attack there is a further formation of fibrous tissue, invading and replacing the muscular tissue. 3. Small, round cells collect in the connective tissue between the muscular fibres, among the lymph spaces and, between the cells, retiform tissue forms. These round cells are not replaced by fibrous tissue, but go on to form lymphadenomatous masses. A macroglossia may even terminate by the development of small round cells, or lymphosarcoma. In any given case, or in different parts of the same case, the relative proportions of these changes vary.

Treatment and Prognosis. Butlin says: "There is only one treatment of lymphangioma, and lymphangiomatous macroglossia—wedge shaped excisions. The older methods of puncturing, injecting, applying pressure by strapping, incisions, blistering, leeching, use of setons, treatment by mercury or iodide of potassium internally and externally are calculated to only make the disease worse. The same is the case with caustics, and the cautery.

"If the disease is not far advanced, and the operation can be postponed until the child is older and stronger, nothing should be done to irritate the tongue, or to cause extravasation of blood into the cysts. Recurrence of inflammation and enlargement of the stump must be ascribed to insufficient removal. The line of incision should, if possible, run through healthy muscular substance."

Kuhn (3) writes: "Inasmuch as the condition most often occurs in children of delicate age and constitution, one must guard against undue loss of blood in any operative procedure, therefore free and complete ligation should be done first. In removing wedges of tongue, Boyer advises removing two wedges, one horizontal and one vertical; on account of hemorrhage the wedge operation is fraught with great danger."

Arthur E. Barker (17) reports that he has operated by two wedge-shaped flaps back of the tumor in fairly healthy tissue. Thirteen years later, tongue was very thick and a horizontal piece involving about the anterior two-thirds of the tongue removed. Four years after second operation the only defect was a slight lisp. Pathological examination of the first piece showed typical lymphangiectasis. The second piece showed a change to a venous naevus.

In the case reported herewith. We do not feel justified as yet in operating as the exacerbations are infrequent and the child is comfortable most of the time.

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- 303 Post Building.

Surgery of the Pituitary Body. E. V. SEGURA, *Semana Medica*, XXIV., No. 4, 1917.

Segura urges prompt removal of a tumor in the pituitary body as soon as it is diagnosed, and reports his experience in five operative cases. The preferable mode of access is the inferior nasal, and the only difficulty is the possibility of anomalies in the sphenoidal sinus which make it hard to locate the point where the dura mater over the sella turcica should be opened. The results were highly satisfactory in his five patients. In one the operation revealed syphilitic lesions in the sphenoidal sinus and the operation was interrupted and specific treatment applied, with complete subsidence of all disturbances in time. Two of the patients who were nearly blind recovered practically normal vision after removal of the pituitary tumor. Menstruation had been suspended for two years in one case but reappeared after the operation, the dates corresponding with the date of the latter during the six months since. These seem to be the first operations on the pituitary body in South America. ED.

NASO-PHARYNGEAL FIBRO-MYXOMA, UNDERGOING SARCOMATOUS CHANGES.

DR. LEO J. GOLDBACH, Baltimore, Md.

Frank D., 17 years old, white, complained of bleeding from the nose, which was worse at night. The patient was treated by his family physician. October 29, 1915, he had a severe hemorrhage requiring packing of the nose. His condition not improving and the hemorrhage growing worse, he was advised to have a nasal operation. A doctor was called in consultation and said he had adenoids and enlarged tonsils. These were removed under ether the latter part of October. The patient stated he was free from bleeding but could not breathe through the right side. December 10 he was awakened with a choking sensation and expectoration of blood. The doctor removed something from his throat and this brought on a very active hemorrhage which was only controlled by nasal and post-nasal packing. He was sent to the hospital the second week in December for an operation, but the bleeding being very active no attempt was made to operate. With the nasal packing there was oozing. This condition continued for a week when the bleeding stopped. Since then he could not breathe through his nose.

On May 9, 1916, he consulted me at my clinic at the Presbyterian Hospital, through the kindness of Dr. Laroque.

Posterior rhinoscopy revealed a smooth, dull red mass, attached to the posterior wall of the pharynx extending into the vault. Anterior rhinoscopy showed a curtain-like effect in the posterior part covering the opening of the right nasal chamber, and going up to the posterior end of the middle turbinate. Digital palpation through the mouth suggested a firmly attached growth, smooth, even in contour, and moderately hard with tension. It suggested a fibrous sack with fluid. A trochar was used for the purpose of aspiration; we got quite a free bleeding, and the bleeding acted as though it were under pressure. The patient was so deathly afraid of another active hemorrhage that he refused any kind of cutting for microscopical purposes. I advised removal of the growth.

On June 1, under ether anesthesia I tried to remove the growth. I found difficulty in using a nasal snare through the nose; I could not get thick wire through the snare; the ordinary wire used for the nasal snare would snap. I tried to remove it through the mouth with

a tonsil snare; invariably it would slip off. The history of bleeding made me cautious about cutting with a knife. After various unsuccessful attempts, it was suggested to first cut it with an adenoid curette and then snare the base. This was tried and successful. To our utter amazement we had very little bleeding. The naso-pharynx was packed. The next day the packing was removed. Two days later the growth was removed from the right nasal side with a snare. There was some hemorrhage, but not very active. The patient progressed nicely.

The growth measured 30x20x15 mm., being cupped-shape. For a few days the soft palate was painful and swollen from the traction made on it during the removal of the growth.

Anticipating hemorrhage, arrangement was made to do tracheotomy if found necessary. In fact, from the history of the case, I was tempted to do a preliminary tracheotomy, shut off the larynx by packing, give the anesthetic through the tracheotomy tube and then proceed to operate. Fortunately, the bleeding at no time was very troublesome.

December 11, 1916, examination of the patient showed no evidence of any recurrence.

Reviewing medical literature I find very little information regarding the best way of handling naso-pharyngeal growth. No definite method or special way for access is given. Various suggestions of indefinite and uncertain forms are outlined. Laryngological literature lacks means of describing the best way of handling these cases. Mention is made but no detailed accurate description is given.

I have written the clinical side in detail in order to note the unusual occurrences and the hemorrhages.

The patient's first complaint was difficulty in nasal breathing and bleeding. When I saw the patient eight months afterwards he had practically no bleeding but difficulty in breathing. The mass was then occupying the better part of the naso-pharynx and covered by the smooth, glistening membrane.

The nasal bleeding undoubtedly came from the growth on the posterior end of the right middle turbinal. Why the removal of adenoid and tonsils gave him relief from bleeding for over a month is difficult to say.

The pathological report from Doctor H. J. Maldeis follows:

"The tumor is in several parts. The smaller one being rough and irregular, with ragged edges, without a capsule. It is white for the most part, although several areas present a whitish red appearance. The larger piece of tumor mass is very irregular in outline, non-

capsular, being reddish-white in appearance. Both of the pieces are firm.

"The smaller one shows microscopically a structure corresponding in appearance in every detail to a fibro-myxoma, with some chronic inflammatory changes.

"The larger one shows microscopically a surface which is partially covered by a squamous epithelial layer beneath the basement membrane the connective tissue of which is of a dense, fibrous character.

"Beneath this the tissue shows a very large number of branching stellate cells. These cells vary in shape from fusiform to sphenoidal and cylindrical. Many of the cells apparently branch. Masses of similar cells are seen in various parts of the section. Scattered throughout the section are many small and large dilated spaces, which are lined by a single layer of flattened cells. There are many blood vessels and lymphatics present.

"*Diagnosis.* Fibro-myxoma, undergoing sarcomatous changes."

The patient returned for observation January, 1917; there was no evidence of recurrence, either in the naso-pharynx or middle meatus.

The patient said he has been very comfortable and feeling fine.

322 North Charles Street.

Thyroid Abscess: Two New Signs of this Condition. FRANK H. LAHEY, *Boston Med. and Surg. Jour.*, Jan. 18, 1917.

Three cases have been encountered by the author. In two there was a past history of tonsillitis and in the third the abscess appeared during recovery from broncho-pneumonia. In all three cases there was swelling over the thyroid reaching across the neck and corresponding to the outline of the gland. In one case there was some redness of the skin over the swelling. In the other two cases the skin was normal. There was fluctuation in all three cases, although it was not easy to appreciate since the pus is overlaid by two fairly well developed sets of muscles. In all three there was tenderness on pressure over the swelling. The two signs mentioned by the author are limitation of chin elevation and depression of the chin on the sternum on swallowing.

Ed.

A FREE NEEDLE FOR SUTURING SUBMUCOUS FLAPS.

DR. V. B. FISCHER, Boulder, Colorado.

Many nasal needles exist to-day as a result of an idea entertained by their designer that their particular needles would prove to be the panacea of all suturing difficulties encountered within the nose. No such hopes are held out for this needle. It has proved of value to the author in suturing the flaps subsequent to a septum removal. Possibly others encountering like difficulties will find it of similar aid to them if they have not already devised some better method themselves.

The abdominal surgeon is not content with a suture-carrier; in fact, he abandons the suture-carrier wherever the needle-holder will serve him. If an abdominal surgeon attempted a continuous suture of the parietal peritoneum using a suture-carrier, he would have to rethread the suture-carrier every time the instrument with its sewing material passed through the peritoneum. On the other hand, when a needle-holder is used, one threading suffices for the completion of the continuous suture; and the process, which consists of releasing and grasping the needle as it passes through the tissue, is much simplified.

As in the case of adominal work the suture-carrier does not save time, but generally delays the suturing process, so it has become, in the author's hands at least, in the suturing process subsequent to the removal of the septum. In those cases where the posterior flap does not retract back from the anterior, the reverse curve suture-carrier works to its best advantage. When such conditions obtain, both flaps can be punctured without the necessity of rethreading the suture-carrier. Unfortunately this type of flap is not the most needy of suturing. In fact, if the packing is carefully applied in these cases, so that the flaps are approximated, there is not the least need of suturing. On the other hand, that variety which predisposes toward retraction, most requires suturing and is the least amenable to the process as done with the suture-carrier. In these cases the operator most generally fears to puncture both flaps with a single threading, because of the danger that the needle will tear through the posterior flap as the anterior one is being pierced. There remains, then, for the operator the only other alternative: *viz.*, puncture the posterior flap and withdraw the suture-carrier off

of the sewing material, rethread the suture-carrier and puncture the anterior flap in the same manner. The rethreading of the suture-carrier necessitated by this maneuver proves particularly troublesome, especially when attempted while the operator wears a head mirror; but another equally irritating feature is the possibility that in withdrawing the instrument from the anterior flap the instrument has not been freed from the suture material and remains suspended on it between the anterior and posterior flap. True enough, this trouble does not occur if the operator can differentiate the distal from the proximal ends of the sewing material and retracts the carrier in the direction of the proximal end of the material. However, in the author's experience this process has been difficult and tedious, especially at the end of a long operation.

The instrument illustrated in Fig. C best satisfies the author's needs for a suturing instrument in septum resections. It consists of two parts: a needle-holder built on the lines of the Yankauer



Fig. 1.

reverse-curve suture-carrier; and a short, square-shanked curved needle, which has its eye midway between the shank and the point. In the reverse end of the needle-holder there is a square receptacle of such dimensions that the shank of the needle fits it snugly.

The advantages of this instrument *over* the reverse curve suture-carrier, after which it is modeled, are that it may be used as a suture-carrier in those cases where there is no retraction of the posterior flap; and in those cases where the flaps are widely separated, it may be used as a free needle is used in the case of abdominal surgery.

The technique in using this type of needle is quite simple—more so, in fact, than in the case of the Yankauer suture-carrier. The needle-holder, with the needle inserted into the receptacle, as illustrated in Fig. B, is placed in the nose between the flaps and the back of the instrument is held against the flap opposite that through which the incision has been made. Then, the point of the needle is engaged with the flap at the particular point where a stitch is desired. With the needle thus engaged and held taut with the mem-

brane to be pierced, a tightly wound cotton applicator is pressed against the mucous membrane at the point opposite the site of the needle until the latter pierces the membrane. In supporting the membrane in this fashion no traction is exerted upon the membrane, and the frailest of tissues can be sutured. When the needle has thus perforated the membrane, the point is seized with a hemostat or other suitable forceps, and pulled on through the flap and out of the receptacle in the end of the needle-holder. Then, without rethreading, the needle is again inserted into the holder, as illustrated in Fig. A, and the needle-holder is again placed into the nose (this time between the cut flap and the side wall); and the anterior flap is pierced in the same manner as the posterior. If several sutures are needed, the process is repeated as many times as necessary.

The method of starting the needle through the posterior flap is sometimes more easily accomplished when approached from the naris side of the flap. For instance, instead of placing the instrument between the flaps, preparatory to making the puncture through the posterior flap, the needle is inserted into the nostril and the point engaged with the nostril surface of the flap in the order reverse to that outlined above. When this method is used, the cotton-wound applicator is used to evert the incised flap as well as to exert counter-pressure against the needle point; also the needle is inserted into the receptacle, as illustrated in Fig. A.

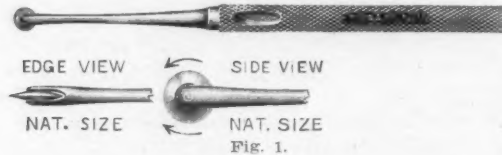
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AN INSTRUMENT FOR MAKING DRAINAGE INCISION ON THE FLOOR OF THE NOSE, OBVIATING THE USE OF PACKING FOLLOWING RESECTION OF THE SEPTUM.

DR. LAWRENCE GATEWOOD, New York City.

The instrument shown here is a rotating knife which the writer uses to incise the floor of the nose, thus permitting dependent and proper drainage of the septal membranes, making it unnecessary to pack the nasal cavity after resection of the septum. The elevation of the mucous membrane and periosteum during the preceding steps of the operation is extended well on to the floor of the side of the initial incision. To use this instrument the rotating blade is placed

on the floor of the nose, a little to the septal side and about one-quarter of an inch posterior to the vertical incision through which the septum has been removed. From this point the instrument is pushed to the limit of the septal removal, sufficient pressure being exerted to carry the rotating blade through the membrane and underlying periosteum down to the bony surface. A small piece of cotton is now placed in the anterior nares of the corresponding side. The patient is cautioned not to push the cotton too far in the nasal cavity, as it may disturb the flap. Many unsuccessful attempts to make this incision properly with the scissors and scalpel created in the writer's mind the necessity for a different instrument. In applying scissors for this purpose the incision would necessarily



have to begin at the vertical incision, leaving no membrane to hold down the antero-inferior angle of the flap. It was also difficult with the scissors to get the incision on the floor of the nose. The scalpel was unsuccessful because in so many cases the irregularity of the nasal floor would not permit its use, besides the great difficulty of incising a detached membrane with a straight cutting edge. Having performed more than one hundred consecutive cases by the above described method, the writer is convinced of its great advantage over the usual method when packing one or both nasal cavities is practiced. No complications have occurred, such as hemorrhage, hematoma, congestion of the sinuses and acute otitis media. The postoperative bleeding is decidedly reduced, there being no intra-nasal pressure to create venous oozing, and the patient's comfort is greatly added to.

15 East Forty-eighth Street.

SOCIETY PROCEEDINGS.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY,

May 31 and June 1, 1917, Atlantic City, N. J.

Surgical Pathology of the Mastoid.—DR. JOSEPH C. BECK, Chicago, Ill.

The macroscopic and microscopic changes were considered in: (1) Acute mastoiditis; (2) Chronic mastoiditis; (3) Acute exacerbation of chronic mastoiditis. The microscopic changes were shown by lantern-slide microphotographs of the various pathological conditions. Acute mastoiditis was divided into two classes: (a) cell-route or confluent mastoiditis; (b) vascular route or osteophlebitic mastoiditis (Grunert).

In (a) one usually found a fistula over the antrum or near the tip, with considerable infiltration of the periosteum. The bone bled easily and at times appeared darker, due to edematous and engorged mucous membrane under the thin cortex. Pus escaped upon removal of the cortex, the amount depending upon the presence of a fistula and the type of micro-organism present. The intercellular septa were usually broken down over the antral region or tip, or both. Sometimes there was an exposed area of lateral sinus, digastric fossa or dura.

In (b)—osteophlebitic type—there were very slight macroscopic changes in the tissue overlying the cortex. On opening the mastoid the bone was very red; little or no pus escaped. The cells were well preserved, their lining membrane not very edematous. It was in this form of mastoiditis that the greatest percentages of perisinus and sinus thrombosis developed due to extension by venous infection from the bone. The same was true as regards erosion of other vital neighboring areas, as dura of the cerebrum or cerebellum, the labyrinth, the facial canal, and the digastric fossa.

In chronic mastoiditis the following gross changes had been identified:

1. Osteo-fibrosis or sclerosis.
2. Osteo-fibrosis with fistular tracts.
3. Osteo-fibrosis with fistular tracts and cholesteatomatous infiltration.
4. Osteo-fibrosis, fistular tracts, cholesteatomatous infiltration with cavity formation of cholesteatomatous masses.
5. Tuberculous osteitis.
6. Syphilitic osteitis.
7. Actinomycotic osteitis.
8. Reparative osteitis.
9. Foreign body in mastoid: (a) Sequestrum (b) Any other substances.
10. Neoplasms: (a) Sarcoma (b) Carcinoma (c) Endothelioma.

The gross pathology of each of these was described.

DISCUSSION.

DR. GEORGE E. SHAMBAUGH, Chicago, emphasized the point brought out in this paper of Dr. Beck's that in suppurative conditions which involved the mastoid the changes in the bone were not always the same. The clinical problem which confronted one in the various cases of suppurative otitis media was quite varied. In the acute cases not infrequently there was no external evidence pointing toward a dangerous mastoid condition, and the indication for interference was based largely upon the presence of such symptoms as pain. In other cases one saw very marked external evidences of a mastoiditis, such as alterations of the outer surface of the mastoid, where one was quite justified in deferring operative measures and where the condition got well spontaneously. He had gathered the impression that cases of acute mastoiditis were handled quite differently in different parts of the country. In some places there seemed to be a more or less general tendency toward early interference where there was the slightest evidence of a mastoiditis. If there was one fact that was established in otology it was this: that external evidence of a mastoiditis is not in itself a positive indication for operative interference. Take, for example, the mastoid reaction which one observed so frequently especially in children in the early stages of an otitis media, before the drum membrane was ruptured. Here one could have the auricle pushed away from the side of the head from edema and yet in the vast majority of these cases an incision of the drum membrane was all that was required.

In chronic suppurative otitis media one was confronted again with the question, which was not always easily determined, whether the situation was one which required surgical measures or whether it was one which could be safely treated locally. The experienced otologist had to-day little difficulty in differentiating between these two types, and the fact that this differentiation could be made obviated the necessity of operating unnecessarily on a great many benign cases of chronic otitis media.

DR. GEORGE W. MACKENZIE, Philadelphia, had been particularly interested in the fibrosis or sclerosis cases. It was surprising to find how small the antrum and how hard the mastoid was in cases of chronic middle ear suppuration. When healing failed to take place in acute middle ear suppuration, one thought of some obstructive or inflammatory condition in the nose, a complication in the tube, or in the oropharynx. In another class of cases the condition tended to become chronic after the correction of these faults. In these cases it was well to look for trouble in the mastoid. The worst cases of mastoiditis were those in which, anatomically, the external cortical layer was very thick. When the suppurative condition was found behind the aditus ad antrum it could not be reached by the anterior route; it was then necessary to employ the posterior operation by way of mastoid operation.

Dr. Beck, in closing the discussion, said most of the cases were of the osteo-fibrotic type. These cases, examined post-operatively, showed no trouble in healing. Osteo-fibrosis was present in practically all of them, but the process should be classified as to whether it was tuberculosis, syphilis, or what not.

The New Usefulness of Otology.—DR. EUGENE R. LEWIS, Dubuque, Iowa.

Otology had found itself, at the present time, in a position to render services analogous to those which had brought merited recognition to

ophthalmology. The integrity of the vestibular apparatus was susceptible to such precise determination that the information derived from ear examination even surpassed that obtainable from the eye. It has been shown definitely that there were separate and distinct paths from the horizontal and from the vertical end-organs to the same brain centers. Impulses from the horizontal end-organ traversed the eighth nerve to the medulla where the pathway divided one branch going to the center for sensing motion in the cerebral center for perception of motion by consciousness of motion, in the eye-muscles, by a pulling of the eyes to one side. Therefore, if on applying a stimulus, the proper perception of motion and pulling of the eyes resulted, one might say definitely that that line was in working order, just as could the tester on a telephone line. The same was true of the vertical canals.

In the application of the ordinary tests, caloric or turning, to a normal case, the first result of stimulation was a false sense of turning which was called "vertigo." The various tests and their responses—turning, fall-tendency, past-pointing—were discussed. Not only careful qualitative observations of responses were necessary, as to the character—horizontal, vertical, or rotary—and the amplitude—small or large—but quantitative determinations as well, using the stop watch to measure the eye movements following stimulation. By using, for the caloric tests, the temperature 68 degrees, the same in every case, and for turning tests, number of turns, rate of speed, and position of head always the same, it was possible to standardize these tests to such a point that observations of tests repeated on the same individual would give results showing no more than one second of variation, placing them well within the bounds of mathematical precision.

A practical application of these tests had been found in aviation examinations. To the internist there was offered evidence of toxic nerve affections in the impairment in the normal responses to stimulation; differentiation of vertigoes, first into systematized and unsystematized types; differentiation of unsystematized into physical and pneurotic varieties. To the neurologist there was offered the assurance that the peripheral neuron and end-organ of the vestibular part of the eighth nerve was intact or not; that the afferent neuron from medulla to cerebellar nuclei was intact or not; that the afferent neuron from cerebellum to center for sensing motion was intact or not; that the one or the other or both the two main motor efferent paths were intact or not. To the cranial surgeon there was offered evidence that a lesion involving one or more of the paths had not crossed the mid-line and was possibly operable, or that it had reached proportions involving tracts from both sides and was inoperable. The ophthalmologist found a new direct pathway to the extra-ocular muscles. His observation of esophoria, esotropia, exophoria, exotropia, and cyclophoria, could be valuably supplemented by accurate observations of the contractibility of the individual muscles in response to involuntary as well as voluntary motor mandates.

DISCUSSION.

DR. WELLS P. EAGLETON, Newark, N. J., said Dr. Lewis' paper called attention once more to the great work of the Philadelphia school. After using the turning test for a considerable time he had become so confused

that he had discarded the chair. Dr. Jones and his associates, however, had gone about the matter in a definite and methodical manner, and their work had done much toward making the method available. One might go through a whole volume of the German Archives dealing with the subject and yet would fail to find just the point that would make it applicable. One should be not merely an otologist, but an otologist plus a neurologist. The vestibular apparatus furnishes a means of diagnosing many conditions before the neurologist could do so, because of the fact that it gave, in many cases, the first symptoms of cerebral disease. In cerebellar pontine tumors and aural symptoms might be present for months, perhaps for years, before the neurologist could make a diagnosis on neurological signs alone.

DR. GEORGE MACKENZIE, Philadelphia, did not agree with the essayist's view that the slow movement after turning was an involuntary compensatory movement. Past-pointing was really a voluntary movement on the part of the patient, just as the quick component of nystagmus was voluntary. He was glad to see that his original figures for after-turning nystagmus had been substantiated. It had been his privilege, twelve years ago, to study with Barany, who stated at the time that duration of after-turning nystagmus ranged from one hundred and twenty seconds to nothing. In a paper presented before this Society two years ago he had given the reason for Barany's failure to obtain consistent findings after turning. He had been stating his figures for the last ten years in different publications and was glad to know that the so-called "Philadelphia School" had come to accept them. There was no such thing as "after-after-nystagmus."

Dr. Lewis, in closing the discussion, did not agree with Dr. Eagleton that an otologist should be also a neurologist; otology was a large enough field in itself. But it was important for the otologist to be able to refer otological cases to the neurologist for assistance in establishing scientifically accurate diagnoses. He had not employed galvanism, as recommended by Dr. Mackenzie. Inasmuch as motion was the natural stimulus of the vestibular apparatus, Dr. Lewis had limited his testing entirely to the use of turning and caloric tests in order to follow nature as strictly as possible in applying artificial stimulus for the purpose of making observations of functional responses.

The Complete Mastoid Operation: Its Relation to the Modern Healing of Masoid Wounds.—DR. HUGH B. BLACKWELL, New York City.

The procedure described as the complete mastoid operation had been performed by the writer on 113 patients. His purpose in using this technic, with its associated after-treatment, was: (1) To prevent as much as possible the development of those serious intracranial and other complications which sometimes follow an inflammation of the mastoid or an operation for its relief. (2) To reduce the time for the healing of the mastoid wound. (3) To render the dressing as painless as possible. (4) To improve the appearance to the healed wound. From his experience with the procedure, which he described in detail, the writer concluded: (1) That in order to satisfy the requirements of the four premises stated above it was necessary to perform all mastoidectomies as thoroughly as possible. (2) That the exposure and curettment of the attic region had a direct beneficial bearing on the post-operative course of these cases

(3) That light packing of the wound, using only sufficient gauze for drainage, together with daily dressings, was essential in obtaining a satisfactory result. (4) That, in respect to the painful dressing, slow healing, and frequently poor cosmetic appearance, the simple mastoid operation was one of the most unprogressive of modern major surgical procedures, and any technique which promised to safely modify these distressing factors of convalescence deserved the serious consideration of otologists.

DISCUSSION.

DR. NORVAL H. PIERCE, Chicago, felt sure that Dr. Blackwell would modify this technic as he progressed in his work. He regarded it as an unnecessary destruction of a very delicate organ, the destruction not being accompanied by improvement in results which could not be obtained by very much simpler methods. He had recently operated on a child on whom, two years previously, he had found it necessary, because of the very septic course from acute otitis media purulenta, to make a thorough exposure of the tympanic antrum and to expose both sinuses. Notwithstanding the fact that both sinuses were explored, there being no external evidence of thrombus, the septic temperature went on, and the wound, therefore, was packed open, no stitches being employed. The patient recovered, fortunately, and the result was a much depressed scar; and, during the two years, there had been three recurrences of otitis media; at each attack the scar would swell, the soft tissues would become inflamed, and the collection of pus in the wound could be squeezed out through the perforation in the tympanic membrane. Finally it was decided to open and see what had taken place. The attic and tympanic antrum communicated with a fistula which extended backward and downward, very near to the knee of the sinus. The bone had completely formed over the surface, with the exception of a very small area (about one and a half inches) over the bone posteriorly. The bone below had formed, but there was a sac from the antrum to the posterior extremity of this cavity. He had not received the histological report on it yet, but he felt sure the sac was caused by the growth of the mucosa from the epitympanic space into this space. In other words, the mucosa had spread more quickly than the bone cells could form bone, and therefore a permanently enlarged antrum was formed, lined by mucosa of low vitality, which became inflamed every time the ear became inflamed. This was not an isolated case; he had seen many similar cases. From these experiences he was convinced that it was not good practice, where it could be avoided, to open the antrum thoroughly,—posteriorly and anteriorly,—and curet it, because of the danger of the spread of mucosa over the hard interior table of the skull, which is poor in blood vessels. It was better to drain from the bottom. He did not advocate, in any case, leaving diseased bone around the antrum; but there was diseased bone around the antrum in very few cases. He was yet to be convinced that the hearing was not impaired in the cases operated on in the manner advocated by the essayist. The mechanism involved was so finely formed that it could respond to vibrations so fine that they were beyond the power of the microscope to measure, and it was difficult to understand how this could be interfered with without impairing its function.

DR. JOSEPH C. BECK, Chicago, Ill., agreed with the views expressed by Dr. Pierce. He asked the essayist to definitely state his premise, as he had found conditions on the operating table. During the last ten years he had not gone beyond the antrum in the first part of the simple mastoid operation, conservatively avoiding disturbing the lining membrane of the antrum. Experience had demonstrated that healing was much more rapid and that the function was better, in acute cases, when the antrum was left alone. If, however, Dr. Blackwell had reference to chronic cases that would not recover from the simple operation, the procedure would be welcomed.

DR. WILLIAM B. CHAMBERLAIN, Cleveland, Ohio, was strongly of the opinion that a paper which advised an operation of such extent in simple mastoid cases ought not to be presented before this Society without challenge. Challenge would doubtless not change the essayist's opinion on the subject, but the Society should not go on record as sanctioning a procedure of this character. The operation described was little more or less than the Heath operation, with the exception that the posterior canal wall was not removed. He had learned from sad experience that any disturbance of the ossicular chain would lead to marked impairment of hearing. Neither Dr. Blackwell nor anyone else could enter the attic, as described, without disturbing the ossicular chain. In a case in which he had inadvertently dislocated the incus, the effect on the hearing was pronounced. The patient's hearing was markedly impaired, and always would be. As to the ear being dry in two days, he could show case after case in which the mastoid operation had been performed, where the canal was free from discharge at the first dressing. The only point on which the speaker agreed with the essayist was with reference to packing. Long experience had convinced him that in many cases convalescence had been unduly protracted by zeal in packing. In cases referred to him by others he had pulled the packing out, left the wound wide open, and healing had quickly taken place.

DR. GEORGE L. RICHARDS, Fall River, Mass., referred to the excellent work of Dr. Beck in connection with surgical pathology and repair of wounds. How could these large wounds heal? The cases looked beautiful when finished, but what about the healing? The cases which healed best and most quickly were those in which nature had prepared things for the surgeon.

DR. CHARLES W. RICHARDSON, Washington, D. C., emphasized the point that while this operation, as detailed by Dr. Blackwell, might be well done by him, it was a dangerous thing to go out to the average man practicing otology and performing mastoid operations. The end results, in at least seventy-five or eighty per cent. of the cases, would be functional impairment from dislocation or injury to the mechanism of the malleo-incudal joint. If Dr. Chamberlain could report a case in which he removed the incus, there was very great likelihood of the less expert doing the same thing. The majority of surgeons performed the mastoid operation in the same manner, as it had been learned from experience and judgment that too much meddling in the antrum and attic was bad for the patient. Recovery was not so rapid, and granulation seemed to be arrested more frequently than where less meddlesome work was done.

Report of a Case of Simple Mastoiditis Complicated by Paratyphoid Fever with Metastatic Abscesses.—DR. DUNCAN MACPHERSON, New York City.

The case was reported for the following reasons: (1) Because paratyphoid fever complicating mastoiditis is rarely mentioned in the literature. (2) The advisability of drawing the attention of otologists to its possible presence, inasmuch as it may insidiously alter more frequent pictures of ear disease, causing confusion and embarrassment in diagnosis unless laboratory help is freely drawn upon. (3) Mastoiditis with acute onset, very little bony destruction, a negative culture at the time of operation, may be followed by remote abscess formation. (4) The temperature, suggesting a possible irregular manifestation of lateral sinus thrombosis. (5) The laboratory help: (a) By negative blood cultures except for the finding of paratyphoid "A." (b) The blood count confusion with pus formation present. (c) Negative Widal and diazo reaction. (d) *Streptococcus hemolyticus* found in the pus taken from the abscesses. (e) The finding of paratyphoid "A" in the blood.

To what extent the paratyphoid alone would have altered the picture of an otherwise healthy post-operative mastoid, could not be stated. What effect the paratyphoid exerted in the formation of the abscesses could not be stated. The normal blood counts might be suggestive of the effect of paratyphoid "A" on blood differentials in the presence of pus, although normal blood counts were found in other acute conditions where pus was present in the body, and bacteremia might escape detection, even in lateral sinus thrombosis, unless the blood was cultured frequently and with special reference to the time of the chill.

Report of Interesting Nasal Cases Probably Due to Syphilis. Remarks on Obscure syphilitic Nasal Symptoms.—DR. DUNBAR ROY, Atlanta, Ga.

Three cases were reported, in which, despite the obscurity of the symptoms, the condition cleared up under the internal administration of iodide of potassium in increasing dosage. Obscure syphilitic manifestations in the nasal cavities were much more frequent than generally supposed. The tendency to depend upon the Wassermann test as the final test in diagnosis led to the exclusion of clinical symptoms which were important in the management of pathological conditions. The syphilitic virus was the fundamental cause of many obscure rhinological conditions which resisted the ordinary treatment. One should not be governed entirely by such tests as the Wassermann in deciding upon the line of treatment. During the past twenty years the essayist, as the head of a large free clinic where the majority of the patients were negroes, and where he had seen syphilitic lesions of every known variety, he adhered entirely to the old treatment with iodide of potassium and mercury, and with few exceptions the results had been entirely satisfactory, when the treatment was given from year to year.

DISCUSSION.

DR. CHARLES W. RICHARDSON, Washington, D. C., suggested the wisdom in such cases, of eliminating all thought of the social position of the patient. Any human being was subject to invasion by syphilis. Acquired syphilis among clergymen and congenital syphilis in the offspring of clergymen were not unknown, as his own case records showed.

DR. LEWIS A. COFFIN, New York City, had frequently found the voice a very reliable indication of the presence of syphilis involving the nasal structures. There was a peculiar nasal sound in the voice under these circumstances. He could recall several cases in which the diagnosis of syphilis had been made from the voice, in one instance before he had seen the patient, and laboratory tests had substantiated this diagnosis in every case.

DR. JOSEPH H. ABRAHAM, New York City, agreed with the essayist regarding the frequency of this affection. He was reminded of what Chairi, of Vienna, had said some years ago, in presenting cases of obscure lesions of the upper respiratory tract: "When in doubt, treat the patient for syphilis." About ninety per cent. of cases of this category were syphilitic conditions. He refrained from using the douche in such cases. If salversan were administered for syphilis involving the antrum, septum, and neighboring structures, care should be taken with regard to the dose employed, beginning with a small dose, about 0.2.

DR. J. W. JERVEY, Greenville, S. C., quoted, in this connection, the epigrammatic declaration of a great teacher: "Know syphilis in all its manifestations, and what remains to be learned will not stretch the plamater of a megaloccephalic senior student."

DR. WALTER B. JOHNSON, Paterson, N. J., thought this case suggested the need for coordination in medical work. The axiom, "Treat them for syphilis," seemed to apply in other specialties, but had not been appropriated by some who treat this particular class of cases.

Dr. Roy, in closing the discussion, reiterated that there were many manifestations of syphilis in the nose which were not recognized, and for that reason the cases did not recover. He cited a case of a woman who had vasomotor rhinitis and a corrugated condition of the nasal mucous membrane. He put her on iodide of potash and it cleared up. Another physician had recommended submucous resection. The corrugated appearance of the mucous membrane indicated a constitutional dyscrasia. In many instances the condition was obscure so far as treatment was concerned, but further investigation would reveal the specific basis.

A Few Puzzling Cases in Otological Practice.—DR. ARTHUR B. DUELL, New York City.

The limited field of the otologist tended to lead him into the habit of looking upon his cases as being characterized by almost unmistakable clinical phenomena. An occasional case was presented, however, in which this very habit of certainty proved a tremendous source of embarrassment. The otologist who encountered widely vacillating temperatures at short intervals in a case of acute purulent otitis, found it difficult to think of anything except septic sinus thrombosis. Not infrequently children with influenza presented this clinical picture; some had an otitis; some had not. When such cases were complicated with otitis, a conclusion as to the advisability of operative interference became extremely difficult. A few illustrative cases were presented.

DISCUSSION.

DR. GEORGE F. COTT, Buffalo, N. Y., had collected and studied seven charts similar to those presented. In every case which there was a break in the temperature the patient recovered. There were no constitutional

symptoms except the temperature, the origin of which was unknown. Vaughn's explanation was probably the correct one. He claimed that some proteid gets into the circulation and as it comes in contact with the cell a proteolytic enzyme is thrown out and the foreign body is digested; this process is accompanied by heat and thus the rise in temperature. The peculiar rise in temperature and its severity depended upon the power of the cell to overcome the poison; the more the effect the greater and more extended the temperature. Without constitutional symptoms, however, these patients always recovered.

DR. LEWIS A. COFFIN, New York City, thought coincident disease of the accessory sinuses might explain some of these cases. He cited a case of a child, two years of age, whose father was told by a prominent otologist that he would not be responsible for the child's life unless he be permitted a mastoid operation. The speaker was called, and after employing suction and administering vaccines the child promptly recovered. Many cases of rhinitis and acute sinusitis would recover without any treatment.

DR. NORVAL H. PIERCE, Chicago, referred to two cases, previously mentioned, in which the sinuses were exposed. In one case both sinuses were exposed, and both were normal, so far as could be determined on the operating table, yet it went through a septic course, with about fifteen abscesses in different parts of the body. Very little pus and very little softening were found at operation, on the eleventh day from the onset. In the other case there was a little fluid pus, when operated eight days after the onset. The sinus was exposed, and was perfectly healthy, and contained fluid blood. Four days after the operation suppurative arthritis was found in the ankle joint. Pus germs could get into the circulation by invasion of the mastoid veins, without involvement of the sinus lateralis. The exact relationship between the influenza bacillus and the streptococcus was a question. Was there an influenza germ per se, and what relationship did this germ bear to the clinical symptoms of influenza?

DR. GEORGE PAULL MARQUIS, Chicago, had had an experience similar to that of Dr. Duel. A child had been ill five or six days, with a temperature ranging from 101 to 105. When called in consultation he found both drum membranes reddened but not bulging. A double paracentesis was made, but the temperature developed a true septic type, ranging from 98 to 106. The patient did not seem very ill; the only alarming factor being the septic temperature chart and the high leucocyte count. The clinician said this could be explained by the influenza bacillus, so operation was deferred from day to day, and the patient made a good recovery.

DR. CHARLES W. RICHARDSON, Washington, D. C., cited one case, in which all concerned urged operation. The first count was thirty-six thousand, and it ranged between that and twenty thousand. In order to be sure, he had the child's sinus and mastoid X-rayed. He asked Dr. Duel if he had observed in any of his cases the phenomenon of profound sweating.

Dr. Duel, in closing the discussion, answering Dr. Richardson's question, said the child had profuse sweats. Euthanasia might be characteristic of sinus thrombosis.

End Results in the Treatment of Ozena by Means of Vaccines.—DR. HENRY HORN, San Francisco, Cal.

The cases previously reported were analyzed in the light of an additional year's treatment, and new cases were analyzed. It was proposed to limit the investigation along certain specific lines, and to determine: (1) The existence of different types of ozena upon a bacteriological basis, and to establish the relationship of atrophic rhinitis to accessory sinus disease. (2) The clinical relationship of *B. rhinosepticus* and the *B. Friedlander* group of ozena. (3) The value of specific vaccine therapy in the various types of atrophic rhinitis. In this report of the third year observations of clinical ozena and its vaccine treatment, the following analysis of results of new cases treated since the last report, was given: Twenty-six cases were reported in the new series. Six were untreated. Five did not improve; six cases were improved as the result of operative drainage on the sinuses, and no credit was given to the vaccines. In the nine remaining cases great improvement or clinical cures were noted. Of the five cases showing no improvement only one was a true *B. rhinosepticus* ozena. This case received but three injections and did not return. In the remaining nine cases improvement was marked, in some cases very striking, the crusts and odor rapidly disappearing. The frontal headaches invariably cleared up after the third or fourth injection. Weight and general condition improved. These and the last year's series, carefully studied, gave no reason to change the conclusion, stated in last year's report, that "at present mixed vaccines made from various strains of the Perez bacillus (*B. rhinosepticus*) is the most practical method of treatment which is now available."

DISCUSSION.

DR. WILLIAM R. MURRAY, Minneapolis, Minn., said: "Before discussing the etiology of ozena, I wish to congratulate the essayist on the great amount of work he has done in connection with this subject. The etiology of ozena has been an unsolved problem and the therapy of this disease has been equally unsatisfactory. It is only by an intensive study of ozena that we are going to accomplish anything. I am not as optimistic, however, as Dr. Horn is in regard either to our knowledge of the etiology of ozena or its treatment.

"Two years ago Dr. Larson and I published the results of our study in regard to the Perez bacillus being the cause of ozena, and further study, bacteriologically and clinically, has not enabled us to change our opinion. You are all familiar with the literature on the bacteriology of ozena, but I would like to call attention to a few points in connection with the published works of Perez and Hofer. In our work we were unable to isolate the Perez organism from ozena cases, and an analysis of the work published would indicate that there is considerable doubt that this bacillus has ever been obtained directly from the patient. Hofer states that it is very difficult to isolate from the human, and, while he rather leads us to infer that he has isolated it, he does not positively state so. The Perez bacillus is described as Gram-negative bacillus. This description, however, does not identify the organism. It is only a morphological description and there are a large number of Gram-negative bacilli which can be isolated from ozena cases, and these different bacilli cannot be differentiated morphologically. It is only by culture and serological tests

that they can be identified. In our work, two years ago, we were unable to isolate a Perez organism from our ozena cases, and further work, since that time, has not changed our findings.

"Where does Hofer obtain his organism, which he claims is the cause of ozena? He goes to the rabbit's nostrils for it. He previously injects, into the ear vein of the rabbit, a mixed culture obtained from an ozena case. He then obtains, from the nostrils of the injected rabbit, the Perez organism. Was the Perez bacillus present in the nostril of the ozena case, or did it previously exist in the rabbit's nostril? It seems strange to us that if this organism is the cause of ozena and is present in ozena cases it can not be isolated from the patient. There is present at times in the nostrils of some animals, including the rabbit, an organism, the *B. bronchisepticus*, that has all the morphological and cultural characteristics of the *B. Perez*. These bacilli, the *B. bronchisepticus* and the *B. Perez*, are probably identical. Dr. Horn, in one of his recent publications, states that the *B. bronchisepticus* and the *B. Perez* give positive complement fixation tests to the same serum. This would prove their identity. The *B. bronchisepticus* is also present, at times, in dogs and is greatly increased in the presence of a nasal infection in dogs, and in cases of 'snuffles' in rabbits it is frequently present.

"There are a number of organisms present in the nostrils of ozena cases that resemble, morphologically, the Perez bacillus. One of the most frequently present Gram-negative bacilli is the proteus, as shown in our report in 1915. This organism appears, microscopically, identical with the Perez, except that it is motile. Culturally it is quite different. Dr. Horn describes his organism, which he isolates from ozena cases, as being motile, and assumes that it is the Perez organism. The Perez bacillus is non-motile.

"Serological tests also disprove the theory that the *B. Perez* is the cause of ozena. It is generally agreed that ozena causes never give any serological reaction, such as the agglutination or complement fixation tests, with the Perez organism. All investigators agree that the animals treated with the Perez bacillus respond promptly in the production of both agglutinin and complement fixation antibodies. In view of the fact that antibodies are so readily formed against the microorganisms in treated animals, why is it that blood of ozena patients never contains such antibodies until after having been vaccinated?

"Regarding the results of vaccine treatment upon the course of ozena, there seems to be no unanimity of opinion at the present time. While some investigators report favorable results following the use of Perez vaccines, others using the same vaccine find the treatment does not influence the course of the disease. Personally I have used Perez vaccines prepared from cultures received from Hofer, also vaccines received from Dr. Horn and Dr. Victors, as well as ozena vaccines supplied by commercial houses, and the results have not been encouraging enough to warrant any belief that the vaccine treatment is effective. Even though a few cases do show some improvement under vaccine treatment, this must not be regarded as conclusive evidence that the microorganism from which the vaccine is prepared is the specific cause of ozena. We not infrequently see what appears to be improvement in certain conditions where a non-specific vaccine is used. For instance, Hodgkin's disease not

infrequently improves temporarily under vaccines, and it seems to make little difference from what germ the vaccine is prepared. Favorable results have been reported from the use of Lowenberg-Able vaccine in ozena.

"The fetid odor of ozena is probably caused by proteolytic organisms, growing upon the crusts, secretions, and destroyed tissues, and these organisms probably bear no relation to the etiology of ozena. At the present time, it would seem that there is insufficient evidence to justify the conclusion that ozena is caused by any specific organism."

DR. WOLFF FREUDENTHAL, New York City, speaking from the clinical point of view, had come to the conclusion that the primary cause of ozena was atrophy of the mucous membrane, infection being the secondary cause. Whether the organism involved were the bacillus of Friedlander or of Perez made no difference. The fact that Dr. Horn found the bacillus of Perez in the sinuses brought up the point of focal infection, to which Gruenwald, Hajek, and others, had called attention many years ago. In his work with tuberculous patients he had found all sorts of organisms in their sinuses. The investigation of vaccine-therapy in connection with ozena should be continued.

DR. JOHN HORN, New York City, had never had such good results in these discouraging cases as when he had used Dr. Henry Horn's vaccine.

DR. JOSEPH H. ABRAHAM, New York City, reported six cases, five private and one from clinic. He could not get a bronchisepticus vaccine in any case, and the Friedlander in only two. The vaccines gave only fair results. He used a stock vaccine in one case. In one case complicated by empyema of the antrum he proposed to operate in a few days.

DR. THOMAS J. HARRIS, New York City, had been carrying out for a considerable time, at the Manhattan Eye and Ear Infirmary, a careful study of this subject. He had taken the vaccine side and Dr. Coffin the operative side. His work had been absolutely negative. When he had failed, Dr. Coffin had taken the cases, and in two-thirds of them had obtained a cure by opening and draining the sinuses.

Dr. Horn, in closing the discussion, was gratified to know that skilled bacteriologists, such as Dr. Dwyer and Dr. Murray, had investigated his work. He reiterated the fact that he had approached the subject as a clinician, not as a trained bacteriologist. The latter part of the subject had been under the control of Dr. E. Victors, of San Francisco, a trained bacteriologist.

Of the series of cases reported last year, ten remained under treatment. In one case, that of a Catholic priest who had found it absolutely impossible to continue his work in the confessional, no treatment, so far as the vaccines were concerned, had been given during the past year, and the patient had been able to continue his work. This was but an example of the marked clinical improvement in these cases. Full details would be found in the Transactions.

Abscess of the Lung Following Operation on the Tonsils and Upper Air Tract. DR. CHARLES W. RICHARDSON, Washington, D. C.

Since it had been established that this serious complication was not an unusual sequel of operative work, it was incumbent to ascertain the manner of its occurrence, and to consider wherein alterations in methods or technic might prevent it. This complication had largely come under

observation since the adoption of the more radical operation of tonsillectomy in dealing with the enucleation of tonsils. After a most thorough consideration of the subject, the essayist was of the opinion that the method of invasion was either indirect, through the lymphatic or venous system from the wound surface, or direct, through the inspiration of pus or bacterially laden caseous material into the pulmonary tract. By whatever method the operation was performed, there was more or less squeezing of the tonsils so that contained pus or masses of cheesy debris was forced out from the substance of the tonsils or from the diseased crypts. By whatever method the operation was performed numerous lymphatic vessels and moderate-sized veins were necessarily opened, and a deep wound surface was left to be bathed in the abundant flora of the faucial cavity. Efforts should be directed toward minimizing the effects of these two important factors, by lessening the amount of trauma as far as operative skill would permit, and through the adoption of all methods to prevent the ingress of pus or cheesy material from the tonsils into the pulmonary tract.

The treatment of pulmonary abscess was medical, or expectant; surgical; compression of the lung by artificial pneumo-thorax. Artificial pneumo-thorax was apparently the ideal, rational, and most acceptable method of treating acute pulmonary abscess. Dr. W. D. Tewsbury, Superintendent of the Washington Tuberculosis Hospital, who was the first to use the method in acute lung abscess, employed air instead of nitrogen. In order to obtain cures it was necessary to employ pneumo-thorax early, while the abscess was soft and compressible.

Results Obtained by Tonsillectomy in the Treatment of Systemic Diseases.

DR. DANIEL W. LAYMAN, Indianapolis, Ind.

(Published in the present issue of The Laryngoscope.)

DISCUSSION ON PAPERS BY DR. RICHARDSON AND DR. LAYMAN.

DR. LEE WALLACE DEAN, Iowa City, Iowa, said that in his service he had one case of pulmonary abscess following an operation on the throat of a child five years of age. The diagnosis was confirmed by the post-mortem examination.

He did not agree with Dr. Richardson as to the advisability of having patients fast for six hours previous to tonsillectomy.

There had just been completed in the Chemical Research Laboratory of the Department of Medicine at the University of Iowa, an investigation of acidosis in connection with infection. The object of the research was to determine whether children with a chronic infection of the tonsils were more susceptible to acidosis than those whose tonsils were not affected. It had been found that starvation of children with chronically diseased tonsils would always produce acidosis. In short, in one instance the reaction was alarming. In view of these findings he scheduled his operations for early in the morning, and fed the children abundantly on carbohydrates late at night. As soon as possible following the operation, carbohydrates were given.

DR. SYLVAN ROSENHEIM, Baltimore, Md., said many difficulties had been encountered when the practice was started of taking out the tonsils by dissection instead of tonsillectomy. The most important of these difficulties was hemorrhage, and when that was eliminated the problem

seemed to be solved. Since reading the articles by Richardson, Coakley, Manges, and others, on the subject of abscess, another view of the question was necessary. He had had no experience with abscess of the lung or sepsis, perhaps because of the technic employed. He operated with the head low, in order to keep the field perfectly clear of the caseous matter. The failure to do this doubtless accounted for many lung infections.

In considering results one must consider the types of cases operated on—whether they were mechanical cases, with obstruction to breathing and with effects on the hearing, or whether they were systemic cases, in which the tonsils were operated upon as foci of infection. In the second class of cases, while he had no detailed statistics at hand, results had encouraged him to continue to take out tonsils in the presence of such indications. There might be other indications for removing the tonsils. Laryngeal tuberculosis, for example, had been known to improve after removal of the tonsils. In one case which he recalled the vocal cords were a mass of infiltration, suggesting the necessity of laryngectomy. The patient was sent to a lung specialist, a section was removed, and typical tubercles found. The tonsils were removed as a prophylactic measure, and the patient recovered entirely. The tonsils had also been suggested as the foci of infection in poliomyelitis.

DR. GEORGE F. COTT, Buffalo, N. Y., recalled two cases of systemic diseases in which removal of the tonsils was resorted to. In one, a woman with arthritis of mild character, in which she could not straighten her left knee for six weeks, was able the next day to do so without pain, she left the hospital in less than a week. In another woman, aged 44 years, with a large goitre and arthritis, after removal of the tonsils her symptoms were much ameliorated and two-thirds of the goitre disappeared.

He recalled a case in the practice of a colleague who did a minor uterine operation on a patient with goitre, intending to remove the goitre later; the patient promptly died.

The speaker presented lantern slides showing lung abscess. Artificial pneumothorax was doubtless the most efficient treatment. It should be employed by the laryngologist. The reader might be easily instructed, and without danger to the patient, by using the Fluoroscope.

DR. WOLFF FRUEDENTHAL, New York City, unlike Dr. Richardson, sometimes had vomiting during operation. In view of the lymphatics opened in the course of operations on the upper air passages it was remarkable that more cases of infection were not encountered. Six out of eight cases cited by Manges had occurred in one hospital in New York City. This was significant.

He did not agree with Dr. Layman with reference to prophylactic tonsillectomy in every child.

DR. LEE COHEN, Baltimore, Md., emphasized the importance of formulating some general procedure in operating in the presence of focal infection. There were various focal infections which were manifest in the absence of disease of the tonsils. Among a number of cases referred to him, in one there were definite deposits in the joints, and in one there was definite neuro-retinitis. He made cultures to ascertain whether organisms could be found. In twelve cases the cultures showed streptococcus

viridans associated with pneumococcus. In these cases the results were absolute. The internist had excluded every other source of infection before the cases were sent to him.

DR. ROBERT H. CRAIG, Montreal, Canada, had had one case of lung abscess attributable to the anesthetic. Since this occurrence, in operating upon adults he had preferred to use intratracheal insufflation, for which he claimed many advantages. The operation was facilitated by having the anesthetist out of the field of operation. A continuous flow of ether and air, warmed through a water-bath to body temperature, was administered in any mixture of the two, from pure air or oxygen to pure ether, the average being 35 per cent. ether to 65 per cent. air. The ether-air vapor was forced into the lungs through the tracheal tube with five to ten millimeters mercury pressure for children, and ten to twenty for adults, thus insuring a forced exit of air from the glottis, which prevented the aspiration of mucus, blood or other oral or nasal secretions. The operation could be done more deliberately, as once the patient was completely anesthetized the amount of anesthesia could be more carefully gauged than by any other method of administration.

The recovery from the anesthetic was accomplished almost without shock or vomiting, as the patient could be given air or oxygen through the tracheal tube after the operation was completed. It was necessary to have an expert anesthetist for this work.

Dr. Layman, in closing the discussion, did not wish it to be inferred, as Dr. Freudenthal had suggested, that he advocated tonsillectomy in all cases.

The Examination of the Larynx and Upper End of the Esophagus With the Head Straight. Demonstrated With Lantern Slides. DR. RICHARD H. JOHNSTON, Baltimore, Md.

The technique called for the supine position. The child was wrapped and pinned in a sheet, so that arms and legs were practically immovable, and placed supinely on the table, with the head straight and in the same plane as the body. The head was steadied between the hands of an assistant, standing at the end of the table. A nurse attended to the body and limbs. Standing to the left or right side of the table, the operator passed the ten millimeter laryngoscope—long for older children, short for infants—between the respective bicuspid teeth, pushed the tongue to the opposite side, raised the epiglottis, and exposed the larynx in a few seconds. After viewing the larynx, if it proved desirable to examine the upper end of the esophagus, the spatula end of the instrument was pushed back of the larynx and, usually without a lifting movement, the esophagus opened up and could be quickly observed for stricture or foreign bodies. While not absolutely necessary, a full dose of atropine a half hour beforehand would aid the operator in securing a dry throat. The exposure of the larynx and upper end of the esophagus was accomplished so quickly that it was not necessary to starve the patient.

This technic was employed in adults, under general anesthesia, for operating in the larynx and for the examination of and the removal of foreign bodies from the upper end of the esophagus. It was rarely the case that general anesthesia was required in direct laryngoscopy in adults. For direct laryngoscopy in children up to ten years of age, no

anesthesia, local or general, was employed; after ten, the operator must use his judgment.

A New Method of Working Out Difficult Mechanical Problems of Bronchoscopic Foreign Body Extraction. DR. CHEVALIER JACKSON, Philadelphia, Pa.

(Published in the October, 1917 issue of The Laryngoscope.)

DISCUSSION.

DR. SAMUEL IGLAUER, Cincinnati, Ohio, was interested to note that Dr. Johnston did not hesitate to use atropin or morphine when he thought them to be indicated. If the secretion could be dried up by these measures they should be employed. He was also interested to know that Dr. Johnston had reached the point of being able to employ direct laryngoscopy in the home. This would be a great aid. He recalled one case in which he suspected laryngeal diphtheria. In order to make the examination he had to take the child to the hospital. Both Dr. Johnston and Dr. Jackson advocated the use of small tubes; he had always thought he could see more through a large tube. It was sometimes necessary to devise instruments to meet the needs of special cases.

Referring to Dr. Lynah's remarks concerning emphysema of the lung in bronchial obstruction, the speaker recalled that some years ago he had pointed out that with a partially obstructive foreign body in the bronchus the lung of the same side might become overdistended, owing to the fact that air passed the foreign body during inspiration, but was trapped when the bronchus contracted during expiration. The resulting distention of the lung on the foreign body side might lead to error in diagnosis as one usually expected lung collapse, and no distention beyond a foreign body.

Dr. Jackson, in closing the discussion, emphasized the importance of Dr. Johnston's work, which, in the speaker's hands, had proved to be all that Dr. Johnston had claimed for it. Direct laryngoscopy would never come to its full degree of usefulness until the laryngoscopist was prepared, as Dr. Johnston was, to go into the home and tell the general practitioner why the child had a croupy cough. If diphtheria was suspected, the family physician would not allow the laryngologist to take the child to the hospital and give it an anesthetic.

Referring to Dr. Lynah's remarks about the use of small tubes, the speaker depreciated the use of large tubes. Unfortunately much preliminary practice had been done in clinics on adults under local anesthesia. Then when the operator encountered a foreign body case in an infant he was handicapped by being compelled to work through a very small tube. If the use of a large tube were attempted it would prove fatal to the child, as shown by the work of Dr. Imperatori and Dr. Forbes.

There was little objection to using the drugs referred to by Dr. Iglauer in adults or adolescents. In children, and especially in infants, morphine and cocaine were both very dangerous.

As to bronchoscopy in cases of abscess in cases other than those of foreign bodies he had seldom been able to reach anything that could be called an abscess cavity. Usually the pus was found to come from a small branch bronchus, the orifice of which was swollen and more or less inflammatory. A further study was being made of such cases.

PHILADELPHIA LARYNGOLOGICAL SOCIETY.

MEETING IN CADWALADER HALL, COLLEGE OF PHYSICIANS.

December 4, 1917.

DR. H. B. COHEN, Reporter.

1. A Case of Sarcoma of the Velum Palati Improved by Roentgen Rays.

DR. GEORGE C. STOUT. (By invitation.)

The patient was a male, 50 years of age, who complained of trouble in the roof of his mouth for a period of eight years. There was no pain or discomfort except some difficulty in swallowing and impossibility of breathing through the nose. The latter was so marked that he was frequently obliged to sit up in bed to recover breath. The general health was good but there was some deficiency in hearing in each ear. Examination of the fauces showed an ulceration on the anterior wall of the right side of the palate $1\frac{1}{2}$ inches long by $\frac{3}{4}$ of an inch wide. This ulceration was deep, edges clear-cut, and covered a thickening in the palate the size of a pigeon's egg which extended back into the upper pharynx, occluding nasal respiration. Various surgeons had been consulted, including laryngologists of excellent reputation, their reports giving a negative Wassermann and a negative examination of a fragment of the growth itself. The ulceration was not difficult to heal but the tumor decreased very little in size, if at all. After three applications of the X-ray the growth entirely disappeared and a V-shaped portion of the palate also melted away, leaving apparently healthy remnants and an appearance of cleft palate, with raw edges. The difficulty in breathing disappeared, and in a few weeks the cleft palate partially healed, but at the present time there remains some regurgitation through the cleft when swallowing liquids. It is now my intention to do a cleft palate operation in this case, to unite the edges of the cleft and hope for a return to normal function in these parts. The patient's general health is, and has been, excellent except for some depression for a week after the recent very strong X-ray application.

2. Bleeding from the Respiratory Tract Below the Epiglottis, Apparently Non-tubercular. DR. GEORGE C. STOUT (by invitation).

The almost universally bad prognosis given to cases of laryngeal hemorrhage in which tuberculosis is eliminated as far as possible is the reason for this brief report. In such cases the hemorrhages are occasionally rather free (in one case here cited as much as eight ounces in one night), in others very much less. In some the hemorrhage amounts to merely discolored sputum. There is usually roughness in the inter-arytenoid space, and frequently a distinct fissure or split can be seen, resembling incision with a knife. This split gradually heals, just as a split lip will heal, and the roughness in the inter-arytenoid space becomes smoother after treatment. The most promptly effective treatment is di-

rect intralaryngeal application of a solution of sulphate of zinc (2 per cent. or weaker) to the inter-arytenoid space.

Case 1 gave a history of acute laryngeal "cold." After a violent paroxysm of coughing one night, the patient brought up a large amount of blood from his respiratory tract. Examination of lungs and sputum negative. Examination showed a split or fissure; oozing blood was distinctly seen in the inter-arytenoid space. Applications of strong zinc solution were applied until the lesion healed several weeks later. No recurrence so far as can be ascertained, the patient remaining in excellent health.

Case 2 gave a history of having several times brought up small amounts of blood after coughing, each attack covering a period of three or four days. Sputum negative. Examination of the larynx presented an appearance similar to case 1. The patient recovered with some recurrence the following winter but since then (a period of sixteen years) he has apparently been well.

Case 3 presented a similar history to the two preceding cases.

Case 4 reported several free hemorrhages from the upper respiratory tract during convalescence from pneumonia. Lungs and sputum negative. The larynx showed the above named signs and responded promptly to treatment. This case is too recent to permit the formation of definite conclusions, but for several weeks there has been no recurrence of the hemorrhage.

Case 5 gave a history of having had more or less bloody sputum over a considerable period of time. The split in the posterior laryngeal wall was plainly visible at the first visit. The patient is still under treatment, the lesion growing smaller and apparently healing satisfactorily although the patient still complains of occasional bloody sputum. In this case the laryngeal bleeding has had a profoundly depressing mental and nervous effect, completely upsetting the nervous system. The heart action has become seriously enfeebled, but there has been no severe loss of blood since the first week. Very similar to this case was that of a patient presenting very much the same symptoms upon whom the general mental and nervous effect was so severe that he may be said to have really died of fright.

3. Defective Speech and Some of Its Phases. DR. MATTHEW S. ERSNER.

(To be published in a subsequent issue of *The Laryngoscope*.)

4. A Plea for Early Training of Defective Speech. MRS. MARY SOMERS STEEL (by invitation).

(To be published in a subsequent issue of *The Laryngoscope*.)

Dr. Harry S. Wieder quoted a case of tuberculosis of the palate and demonstrated a case of unilateral paralysis with edema in a girl with marked pulmonary tuberculosis.

